



# AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING  
WARM AIR HEATING--SHEET METAL CONTRACTING

OCTOBER—NOVEMBER, 1945

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# Let's Go! It's Always The Right Time To Make More Profit With . . .



CLAYTON & LAMBERT



**LAMNECK**

**FITTINGS**

**Remember -- They Will ALWAYS Be Tops!**

• "Products by LAMNECK" have an acceptance value that dealers and jobbers everywhere recognize . . . and profit by! LAMNECK furnace pipe, prefabricated duct and simplified fittings for gravity and air-conditioning systems have long been known as the "most asked for" by the trade. They have long been bought by more people for more satisfaction.

• LAMNECK products, now in steady production, are constantly being improved, and as soon as proven, passed on to the trade. Further . . . efforts are incessantly increased toward the origination of new and needed products that will add further strength to this already time-tested line. Each product will measure up to LAMNECK long-maintained quality standards . . . each will be an outstanding profit maker and good will builder for those dealers and jobbers who are interested in a hard hitting line . . . and more sales!

Phone, wire or write for your nearest distributor and complete details.



**CLAYTON & LAMBERT MFG. CO.**

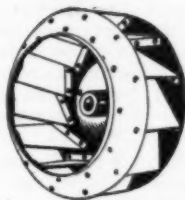
Middletown Division



Middletown, Ohio



*Scheduled*  
**BREAKDOWN**  
...to give you better  
centrifugal fans!



**TESTED** to destruction this fan impeller flattened like a pancake. Yet the blade riveting of the fan didn't fail!

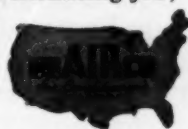
It's a centrifugal fan impeller, used on blowers and fans for exhausting or supplying air in ventilating and air conditioning systems on marine vessels, in commercial or industrial jobs.

Turning at 5000 revolutions per minute at the time of destruction . . . a tip speed of around 25,000 feet per minute . . . the fan cone and backplate were merely compressed by the terrific stresses set up! Maximum operating speed of the fan is 1750 rpm, and usAIRco engineers wanted to check calculations and to observe the effect on

the blade riveting at excessive speeds.

No ventilating fan of this size and type will turn at such a high speed, but a wide margin of safety in the fan design means longer-life and greater-dependability for the fan user. In fabricating the impeller from heavy gauge steel, hydraulic riveting is used to anchor the blade securely to the fan cone and backplate. The result is a stronger and more durable fan impeller. This test proved that usAIRco engineers were right!

If you're looking for dependably-built, longer-life centrifugal fans for your next ventilating job, it will pay you to specify usAIRco centrifugal fans. . . . There is a fan size to fit your own particular requirements.



## UNITED STATES AIR CONDITIONING CORPORATION

Makers of the most complete line of air handling equipment • Factory Representatives in Principal Cities

NORTHWESTERN TERMINAL



MINNEAPOLIS, MINNESOTA

# AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

**FURNACES  
SHEET METALS**

AND

**Warm-Air  
Heating**

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

October-November

Vol. 114, No. 10

1945

Founded 1880

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## In This Issue

**L**ABOR problems are very much on the front page these days. Two articles in this issue deal with phases of that problem—the summary of the veteran's position in apprenticeship training (page 114) and first hand side-lights on the Labor-Management Conference now in session in Washington (page 116).

The veteran summary has been compiled from published facts and from information obtained through local veteran bureaus. Arnold Kruckman writes the conference report, which, perhaps not as optimistic as some might hope, does reflect the conference accomplishments—not the conference's publicized doings.

There are three timely reports in this issue's Air Conditioning Section—(1) Part 1 of a test report on conversion gas burners as tested in our Research Residence; (2) an explanation of the what, why, and results with catalytic oils; (3) a short report of some tests in a domestic stoker of strongly coking bituminous coals (results not very good).

With gas very much the desired fuel today and with gas equipment as scarce as the proverbial hen's teeth but with some conversion gas burners coming through, the test of such a burner (page 125) ought to be especially valuable.

We've been having our troubles the last two years with "catalytic" oils, but few users know what they are, how they are produced, why we are asked to use them—and everybody wants to know "will we have these oils after the war." The answers—to the what, why, and "will we" are pretty well covered on page 132.

Exhaust hoods are discussed in two articles—a pattern for a hood on page 148 and an analysis of a hood in operation in a system (with design and installation details of the system) on page 154.

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# SYNCHROMATIC

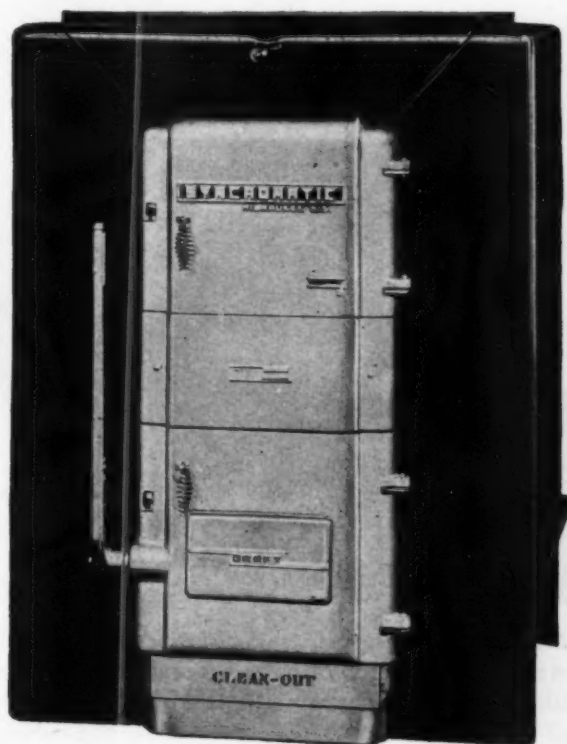
TOP NAME IN COAL » OIL » GAS STEEL FURNACES

*They don't give MEDALS to Furnaces*  
BUT IF THEY DID — *This outstanding Product would win with ...*

*Beauty! Safety!  
Economy! Performance!*

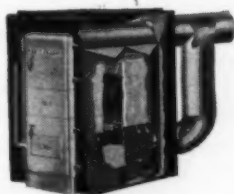
EXTRA COST FOR ALL OF THIS?

**NO!**



*Proven* **BY TEST . . .**

**AT A GREAT RESEARCH LABORATORY  
AND BY THOUSANDS OF SMART USERS**



DEALERS: If you are fed up with doing things the hard way—give yourself a rest by teaming up with this grand line because all America is swinging to SYNCHROMATIC! It's your day to profit—years of it—with SYNCHROMATIC Product and Policy.

Write—We'll have our Jobber in your district contact you!

**SYNCHROMATIC CORPORATION**  
5110 NORTH THIRTY-FIFTH ST., MILWAUKEE 9, WISCONSIN

# North West Air Lines

COAST - TO - COAST

*Keeps 'em Flying*  
WITH **Thor** PORTABLE ELECTRIC TOOLS

Now flying coast-to-coast for the first time, Northwest Airlines will add thousands of passenger-miles to its log and hundreds of maintenance operations to its shop schedules. A great majority of these vital maintenance jobs will be speeded by Thor Portable Electric Tools . . . the tools that Northwest relies on for fast, dependable service.

Light in weight and compact in design, Thor Tools provide greater power per pound and small size for easy handling on tough jobs. They can save time and money for you just as they are doing for Northwest Airlines and thousands of other users—from coast to coast.

## INDEPENDENT PNEUMATIC TOOL COMPANY

600 West Jackson Blvd., Chicago 6, Illinois

New York

Los Angeles



Branches in Principal Cities

NEW, up-to-date catalogs on Thor Electric Tools are ready now. Write for your copy today.

### LIGHTER . . . FASTER A TOOL FOR EVERY JOB!

Small, light, powerful, Thor  $\frac{1}{4}$ " capacity Electric Drills are made in five different speeds . . . 14 models for application to any job in all materials.

More Power in Every Blow with the Thor U100 Electric Hammer. Weighs just 14 pounds and has a capacity up to 1 inch star drills for use in stone, wood or metal.

14 Basic Models of Thor Electric Screwdrivers and Nut Setters . . . with dozens of special attachments means a tool for any assembly job to speed work and cut costs.

# AIR CONTROL

*Floor Registers and Return Air Faces Built with the Famous Rigid-Lock Construction.*



**RIGID-LOCK** Construction is available only in Air Control Floor Registers and Faces. This superior construction rigidly locks each fret to the crossing fret and to the margin — resulting in greater strength and a flat walking surface. As every fret is firmly locked into one integral unit, the load is uniformly distributed over the entire area.

The Air Control floor line has many other outstanding features:

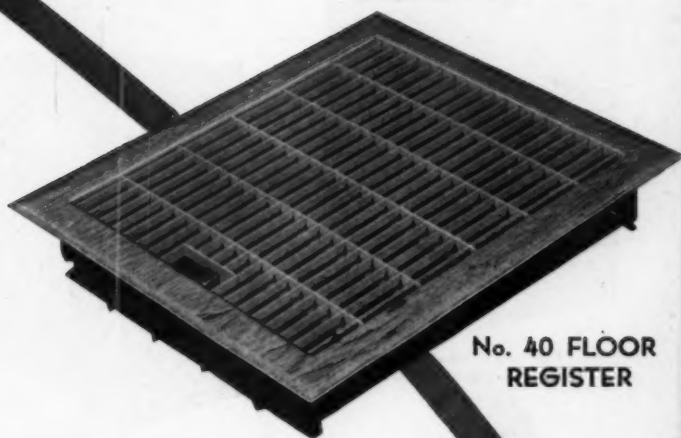
**Oval Edged Frets** — that give a smooth, better looking surface that does not show wear.

**Closer Mesh** — ( $\frac{1}{16}$ " between frets) means more frets per register. A mesh that is heelproof.

**Infra-Red Baked Finishes** — assures the finest of durable, long life finishes.

AIR CONTROL offers a complete line of superior products — Air Conditioning Registers — Gravity Registers — Attic and Roof Ventilators — AIRTROL Air Conditioning Units and Accessories.

*For complete information see your Air Control Jobber or write for literature.*



No. 40 FLOOR REGISTER



No. 41 RETURN AIR FACE

**AIR CONTROL PRODUCTS, Inc.**

*Main office -- COOPERSVILLE, MICHIGAN*

# Postwar

# THE Most

## OF GAS HEATING

### Boilers



Forty-two different boilers for steam and hot water heating

All Bryant boilers have CAST IRON sections for long life and efficient operation



Heavy CAST IRON heating element and baffle plates assure maximum heat and long life for the GF-56 model

Destined to become popular for small homes heating, this STEEL gravity furnace fits the modest building budget



### Gravity Furnaces

Closet space is sufficient room for the VB model with CAST IRON heat exchanger

### Winter Air Conditioners

CAST IRON heat exchanger also is featured in the BA-88 model



This basement-type model with STEEL heat exchanger provides complete winter air conditioning economically



The Vertical model is a moderately priced, spacesaving unit with STEEL heat exchanger



The new Panelray vented wall heater adds beauty and efficient heating to any room in the house



Bryant wall heaters fill the need for moderately priced, non-vented installations

New portable space heaters are built in modern streamline designs



Where circulated heat is required, this Console model does the job thoroughly and efficiently



### Wall and Space Heaters

# Complete Line

## EQUIPMENT IN THE NATION!

● Here it is . . . the postwar gas heating equipment you hoped would come . . . the Bryant Heater line that paves the way for aggressive dealers to go places in the greatest heating market ever opened!

No matter whether your prospect is a new home builder or is modernizing an old home, there is equipment in the improved and expanded Bryant Heater line to fit the job and make a profitable sale.

You can offer boilers with age-resisting cast iron sections, winter air conditioners and gravity furnaces in *both* cast iron and steel heat exchanger models. A group of diversified floor furnaces, wall and space heaters answers small home and individual room heating problems. Specialties, such as conversion burners, attic-installed space-saving heaters and unit heaters complete the picture to meet every heating requirement. All this, plus a new line of Bryant water heaters in a wide range of sizes and prices.

Advertising in national magazines—*more than 13,000,000 four-color printed impressions this year*—has been telling and selling the public on the advantages of buying Bryant Heater equipment, produced by the pioneers of residential gas heating. Colorful new literature and store display materials, as well as an effective radio and newspaper advertising campaign for use in *your own city*, will be ready to help you sell.

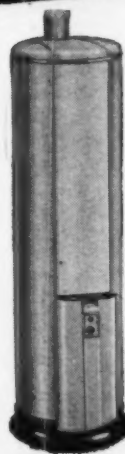
Ask the nearest Bryant Heater distributor to give you the complete story, told in the factual presentation, "Postwar Picture of Home Heating." You'll agree with hundreds of other dealers who say . . . "*now's the time to tie up with Bryant!*" Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, Ohio—One of the Dresser Industries.

**bryant**  
GAS  
HEATING



LET THE PUP BE FURNACE MAN

### INCLUDING WATER HEATERS



Six new automatic water heaters are included in the Bryant Heater postwar line



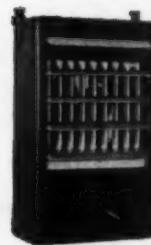
The new streamline water heater matches the modern note of many postwar home designs



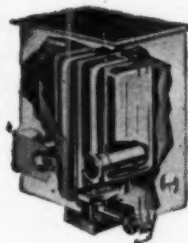
### And many specialties



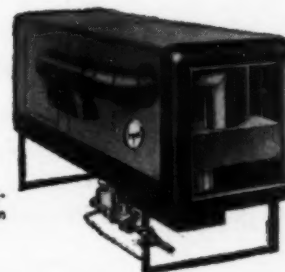
Conversion burners to meet postwar modernization demand



Unit heaters for garages, stores and shops



Floor furnaces in four types to fit every requirement



Forced-air, horizontal space-saver unit for attic installation

# *This New Armco Book helps you sell better-paying jobs*



Here is a brand new book Armco has just published to help you sell "quality work with quality sheet metals," the kind of work that pays. It gives your customers a lot of meaty information about *where* and *when* to use special-purpose sheet steels in house construction and equipment. Thousands of copies are going to people planning to build or remodel.

#### **Helps Your Customers**

"Know Your Steel . . ." is full of useful information and pictures and is designed to help your prospects and customers buy sheet metal construction and equipment with an eye to the *one right metal* for the job.



#### **Makes Your Job Easier**

Everybody who gets this book in your community will learn about the advantages of Armco Special-Purpose



Metals—of how ARMCO Galvanized PAINTGRIP takes and preserves paint—of the rustless qualities of ARMCO Stainless Steels—of the durability of galvanized ARMCO Ingot Iron. All this will make your selling job easier and your work more satisfactory.

#### **Write for Copies**

If you have a few choice prospects to whom you would like to give this valuable Armco book, write us on your business letterhead and we'll see that you get copies. This is an expensive piece; so *please order only the number of copies you actually can*

*put to good use.* The American Rolling Mill Company, 1921 Curtis Street, Middletown, Ohio.

EXPORT: THE ARMCO INTERNATIONAL CORPORATION



## **The American Rolling Mill Company**



## How you can help to insure your own future — and also offset the aggressive plans of competitive industries

...by subscribing now to your own industry's new project — the National Warm Air Heating & Air Conditioning Association's advertising and educational program . . .

*Your competitors* — the washing machine salesman, the refrigerator salesman, the radio salesman, the automobile salesman, etc. — are getting ready to sell your prospects *before you do*.

*Your competitors in the heating industry* are trying to sell your prospects a *different* type of heating plant from the one *you* sell,

The National Warm Air Heating & Air Conditioning Association's proposed program will tell the public why you alone can offer them True Indoor Comfort.

This program must succeed *now*. No use waiting until the horse is stolen to close the barn door. Cost to you is \$50 to \$150 for first year, depending on number of heating units you sold in 1940 (see circular mailed to you by the Association).

Subscribe today — and immediately become an Association member, entitled to display the Association emblem and to enjoy all the benefits of being a part of this big program. Write us for further details if you are not entirely familiar with this program.

*This advertisement sponsored by L. J. Mueller Furnace Co., Milwaukee 7, Wis.*

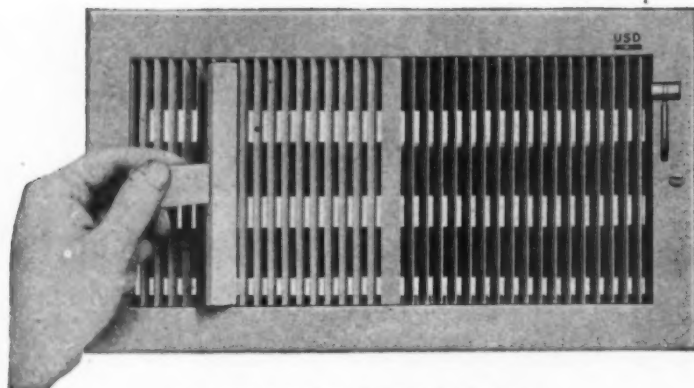


*Chimnatrol*

REG. U. S. PAT. OFF.

D-54

# Auer AIRO-FLEX - A Popular Priced

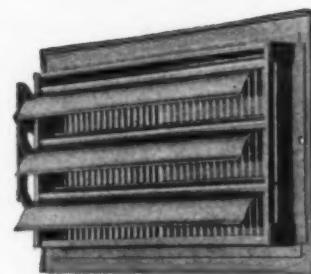


No. 4432 Airo-Flex Adjustable Register

4-WAY  
ADJUSTABLE  
REGISTER

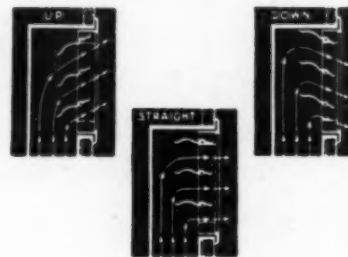


Our Airo-Flex "4400" line of air conditioning registers furnishes every real essential of 4-Way directional flow. Horizontal multi-louvre valve blades regulate up-and-down flow, and indicator on face shows position of these blades. Vertical grille bars are easily adjustable for straight or sideway deflection with turning tool. A register of superb appearance, the Airo-Flex is a simply designed, carefully built, moderately priced model, without frills or gadgets, which gives you all adjustable features of many more expensive registers. It is furnished for wall or baseboard installation with intake to match.



Airo-Flex "4432" Rear View  
Showing Back Blades

Many other types of Auer registers for both air conditioning and gravity systems shown in Auer Register Book, sent on request. For flat stamped metal grilles, ask for catalog "G".



THE AUER REGISTER CO., 3608 Payne Ave., Cleveland 14, Ohio

**Auer**

**REGISTERS**

& GRILLES for AIR CONDITIONING & GRAVITY

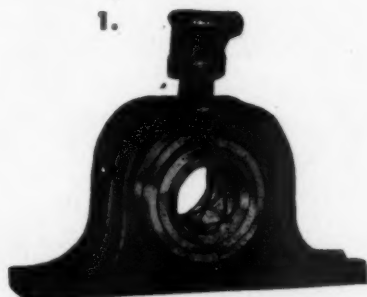
# 3

# REASONS

why fans and  
blowers are

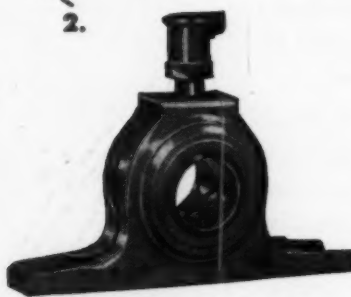
*Quiet*

1.



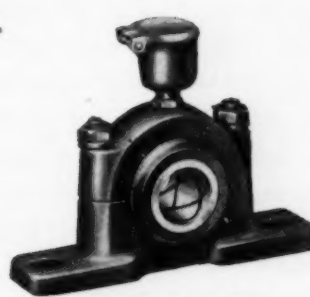
**RANDALL ONE-PIECE STEEL HOUSING  
PILLOW BLOCK**  
Either Double or Single Oil Reservoir

2.



**NEW STREAMLINED ONE-PIECE STEEL  
HOUSING PILLOW BLOCK**  
Either single or double oil reservoir

3.



**STANDARD PILLOW BLOCK**  
Single oil reservoir

# *Randall*

## SELF-LUBRICATING, SELF-ALIGNING PILLOW BLOCKS

**A**MERICA'S finest furnace blowers and air-conditioning units owe their quiet, dependable operation to Randall Pillow Blocks.

Over a third of a century of Randall experience in building graphite bearings—for war and peace—offers assurance of long, trouble-free service and freedom from maintenance trou-

bles. The complete Randall line of self-lubricating, self-aligning pillow blocks provides a type that will dependably meet every air handling need!

Randall engineers can aid you in finding a quiet, dependable solution to your bearing problems! Write now for catalog 42. It is yours without obligation.

C. W. Marwedel  
San Francisco, Cal.

Representatives Carrying Stocks  
Tek Bearing Company  
177 Lafayette, New York 13, N. Y.  
510 Cambridge St., Boston 34, Mass.

Salt Lake Hardware Co.  
Salt Lake City, Utah

# RANDALL GRAPHITE PRODUCTS CORPORATION

Dept. 1011

609 W. Lake Street

Chicago 6, Illinois

# Designed to make HIS Job Easier...

■ Yes, it's the man on the job who most appreciates the practical design features of Perfex-built controls which make them remarkably easy to install and far less likely to require service.

He is quick to recognize the thoughtful attention to small details that results in important installation savings — details such as simplified mountings, convenient adjustments, accessible terminals and ample wiring space. And he sees at a glance many applications of sound engineering principles which assure long, trouble-free service. Rugged mechanisms with sturdy, oversized parts; snap-action, self-cleaning contacts; careful separation and insulation of current carrying parts — all combine to make service call backs rare indeed.

These are advantages you get more consistently in controls which are pre-selected by your heating equipment manufacturer — particularly when such controls are built by Perfex. Engineering leadership and rigid manufacturing standards are the reasons why Perfex-built controls bear many of the best known trade names in automatic heating.



*Fuel-Saving  
Starts With*  
**CONTROL**



# Perfex


**CORPORATION**

300 W. OKLAHOMA AVE.

MILWAUKEE 7, WISCONSIN



MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK  
NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS



*They're called "Best Sellers"*  
BECAUSE THEY DO  
**BETTER WORK**

● The jobbers and dealers who sell Crescent Tools call them "Best Sellers" for one basic reason . . . user demand. This demand . . . which has been increasing for almost Forty years . . . stems from the fact that CRESCENT TOOLS DO BETTER WORK.

Crescent and "Crestoloy" Wrenches, Pliers, Screwdrivers, Hacksaws, Snips and other items are now being manufactured in ever-increasing quantities and will soon be amply available through hardware jobbers and dealers in your locality. When buying tools, specify "Crescent" by name. They're "Best Sellers" in the trade for a very good reason.



CRESCENT TOOL COMPANY  
Jamestown, N. Y.

**CRESCENT TOOLS**  
*Give Wings to Work*

# Mr. Oil Heater Dealer

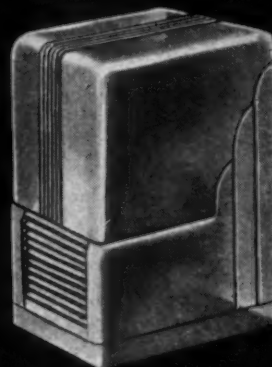
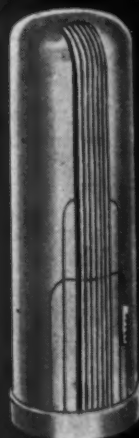
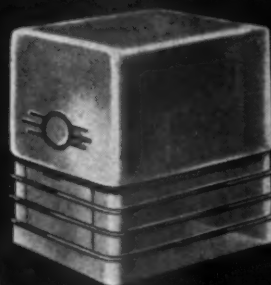


**F**UTURE home builders are thinking modern heating into their plans. Are you, Mr. Dealer, in a position to play the important and profitable role that will be expected of you?

It is time now to give thought to what will be necessary for successful sale of oil burning space heaters, water heaters, ranges and furnaces.

Carefully engineered and constructed products are essential to successful merchandising, and care should be exercised that the line of heaters you choose to sell will measure up to the highest standards.

For nearly 20 years Detroit Lubricator Company has produced "DL" Safety Float Valves to these high standards—simple, sturdy construction assuring reliable service. Select a line of heaters equipped with "DL" Safety Float Valves.



## DETROIT LUBRICATOR COMPANY

General Offices: 5900 TRUMBULL AVENUE  
DETROIT 8, MICHIGAN

Division of **AMERICAN RADIATOR & Standard Sanitary** CORPORATION  
Canadian Representatives—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG



"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • "Detroit" Expansion Valves and Refrigeration Accessories • Stationary and Locomotive Lubricators

# SIZE UP YOUR MOTOR NEEDS

before you  
"freeze" design...

## ASK A WESTINGHOUSE APPLICATION ENGINEER TO HELP

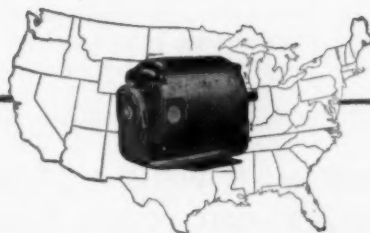
After the design is "frozen" and your apparatus is tooled, changes to accommodate the motor may be costly and time-consuming. Make certain you select the right motor before you go ahead with design. Make sure, too, that you use existing motor designs wherever possible, and avoid the extra cost of specially-engineered motors.

Standardized designs offer a number of advantages: lower cost, faster deliveries, reduced inventories and simplified servicing.

Westinghouse engineers have been applying fractional horsepower motors for decades, and have built into standard motors many special features to meet particular service requirements. Before you "freeze" design, ask for Westinghouse engineering help. Call your Westinghouse office or write Westinghouse Electric Corporation, Lima, Ohio.

J-03227

**Westinghouse**  
SMALL MOTOR DIVISION

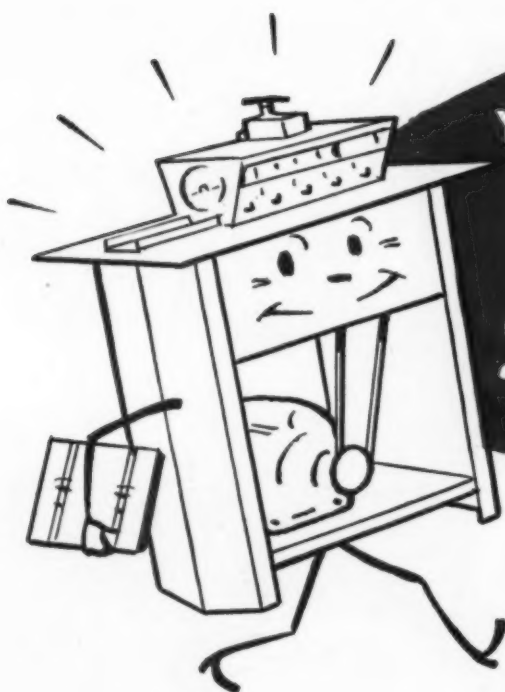


**MOTOR EXCHANGE PLAN PROVIDES  
REPLACEMENT SERVICE IN  
24 HOURS OR LESS**

**ANYWHERE IN THE UNITED STATES**

Westinghouse Motor Exchange points in all principal cities can service most Westinghouse small motors of standard sizes in 24 hours, or less, anywhere in the United States. This service gives the appliance user an efficient, factory-rebuilt replacement motor in exchange for his old motor at a low, flat cost. Your nearest Westinghouse office will give you full details. Ask for bulletin B-3336.





YOU'VE PROBABLY  
MET OUR  
*Star Salesman!*

### NEW DEVELOPMENTS

Like most manufacturers, since Pearl Harbor, we've been given some pretty tough "special" assignments. In solving them we've gotten some ideas applicable to sheet metal construction generally. Now in the "drafting room stage", we hope to announce them in the not too distant future.

### ABOUT DELIVERY . . .

Easing restrictions enabled us to ship more Lockformers in the last sixty days than during any similar period since 1941, and we hope, in the near future, to substantially reduce delivery delays.

**T**HE first Lockformers "sold themselves". BY DEMONSTRATION. From that point on (and that includes right now) Lockformers were bought on the basis of what they HAD DONE . . . not on the basis of what we said they would do.

And, on the basis of what they had SEEN Lockformers do, Sheet Metal Men bought more than TEN THOUSAND machines made by Lockformer.

We don't know how long a Lockformer will last; we do know that the first Lockformers sold are still performing as satisfactorily as the day they were delivered . . . OVER SEVEN YEARS AGO!

It's nice to know, when you buy your Lockformer, that you're making an investment, not a speculation—an investment from which all "gamble" has been removed.

ONE MAN WITH A LOCKFORMER CAN MAKE MORE  
PITTSBURGH LOCKS THAN SIXTEEN MEN  
WITH EIGHT BRAKES



**THE LOCKFORMER CO.**

4615 ARTHINGTON STREET • CHICAGO 44, ILLINOIS

# JUST OVER THE HORIZON



## MONCRIEF'S *NEW* POST-WAR Gas-Fired Gravity Furnaces and Air Conditioning Units

The *Important News* you've been waiting for is in the making—complete details of Moncrief's *NEW!* Post War line of gas-fired air conditioning units and gravity furnaces will be announced soon.

A *NEW!* line with—

EYE APPEAL . . . SALES APPEAL . . . REVOLUTIONARY IN DESIGN

These *NEW!* Post War units will successfully pass the new, rigid laboratory tests required by the American Gas Association.

Moncrief's *NEW!* Post War units are amazingly better than pre war models—remarkably easier to assemble and install—longer lived—simple to service. Wait for Moncrief . . . Watch for Moncrief—equipment that will have sales appeal for the public and profit opportunities for the dealer.



THE HENRY FURNACE COMPANY

MEDINA, OHIO

# MERCOID CONTROLS

*First in  
Quality*

# Worth

LOOKING FOR

ASKING FOR

WAITING FOR

*The only 100% Mercury Switch equipped controls.  
They assure better control performance and longer control life.*

Industry is now going full speed ahead in the process of reconversion, but not without its problems, involving labor re-adjustments and certain limitations on essential materials that are governed by the demands on available supplies.

Every effort is being made to provide for

the ever increasing demand for Mercoid Controls.

The cooperation of the trade is solicited in making known their probable requirements, thereby facilitating in the production plans to the mutual advantage of all concerned.

THE MERCOID CORPORATION • 4201 W. BELMONT AVENUE • CHICAGO • 41 • ILLINOIS

*Manufacturers of Automatic Controls for Heating, Air Conditioning and Various Industrial Applications*

PRESENT AND FUTURE BUILDING PLANS

*bring  
the*

# DAWN OF A NEW ERA

for

## FURNACE DEALERS



*"Grow  
Big"*

THROUGH FULL LINE  
REPRESENTATION IN  
WARM AIR HEATING

**FOR YOU, MR. FURNACE DEALER, —  
A NEW DAY DAWNS!**

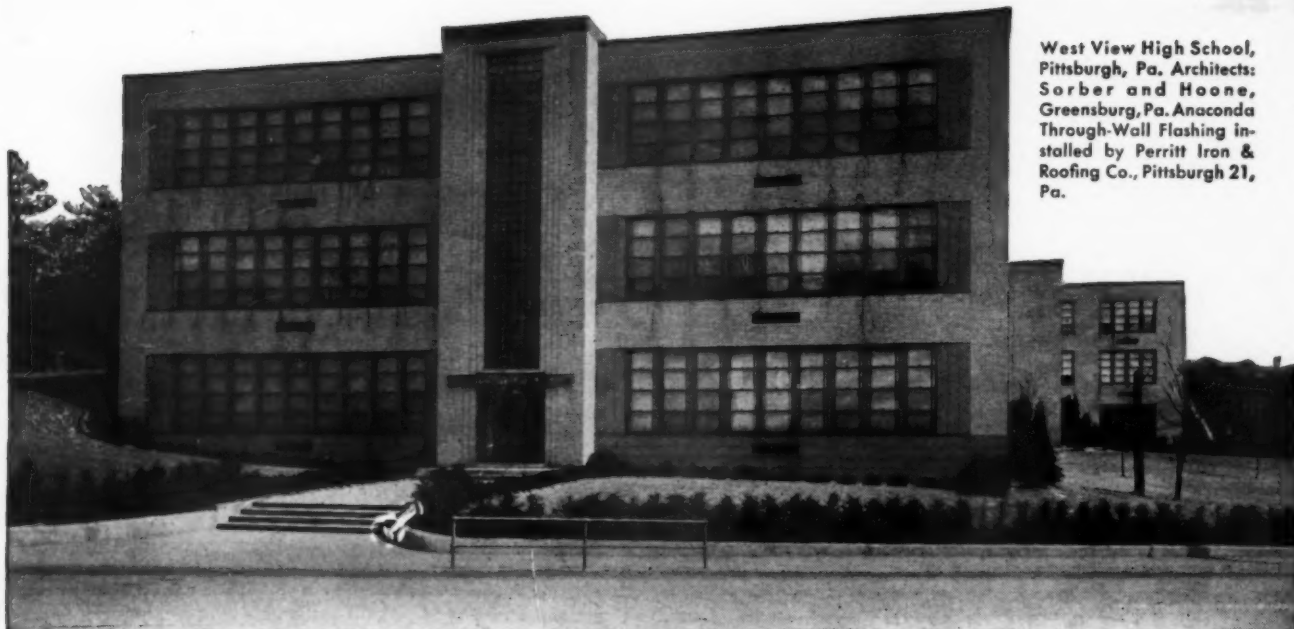
"Grow Big" by representing CERTIFIED's complete line of warm air heating equipment. It is the full line of warm air equipment for every type of building construction from small homes to any size structure. Your postwar opportunities with Certified are unlimited because your potential business field is unlimited. Grow big!!

## CERTIFIED FURNACE COMPANY

DIVISION OF STAINLESS & STEEL PRODUCTS COMPANY

1000 BERRY AVENUE

ST. PAUL 4, MINNESOTA



West View High School,  
Pittsburgh, Pa. Architects:  
Sorber and Hoone,  
Greensburg, Pa. Anaconda  
Through-Wall Flashing in-  
stalled by Perritt Iron &  
Roofing Co., Pittsburgh 21,  
Pa.

## *Frost and Dampness kept OUT* with ANACONDA THROUGH-WALL FLASHING...

THIS MODERN Pittsburgh school building is well protected from damage caused by seepage of moisture through brick and masonry. It is equipped with Anaconda Through-Wall Flashing... *the flashing that drains itself dry.*

The special design of Anaconda Through-Wall Flashing offers other marked advantages: The zig-zag ridges provide a strong bond with the mortar and prevent lateral movement in any direction. The flat selvage permits neat, sharp bends. And in addition, adjacent lengths are easily locked endwise merely by nesting one or two of the zig-zag ridges.

Anaconda Through-Wall Flashing is not obtainable today... but it should be on your list of essential post-war construction materials. Write for Publication C-28, or refer to Sweet's Catalog.

4034

Buy Victory Bonds . . . Help Assure

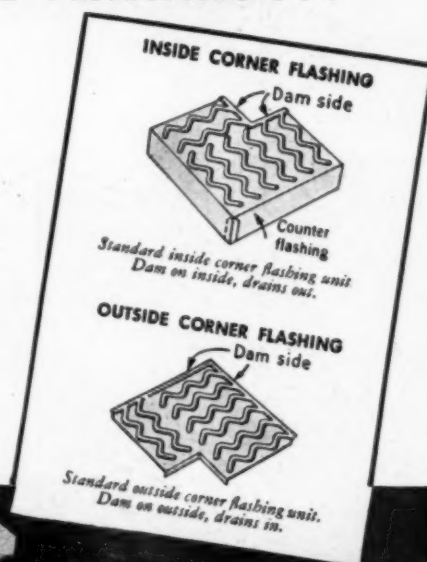
World Peace

### THE AMERICAN BRASS COMPANY

General Offices: Waterbury 88, Connecticut  
Subsidiary of Anaconda Copper Mining Company  
In Canada: ANACONDA AMERICAN BRASS LTD.,  
New Toronto, Ont.



# Anaconda Copper



Anaconda Through-Wall Flashing will be furnished in standard types for 8" and 12" walls.

# How To Reduce Your "Waste"-Line

This has been -- and still is -- a seller's market . . .

Good old-fashioned "Sells-manship" has hardly been necessary . . . but now, in the post-war era, it will carry the number one priority.

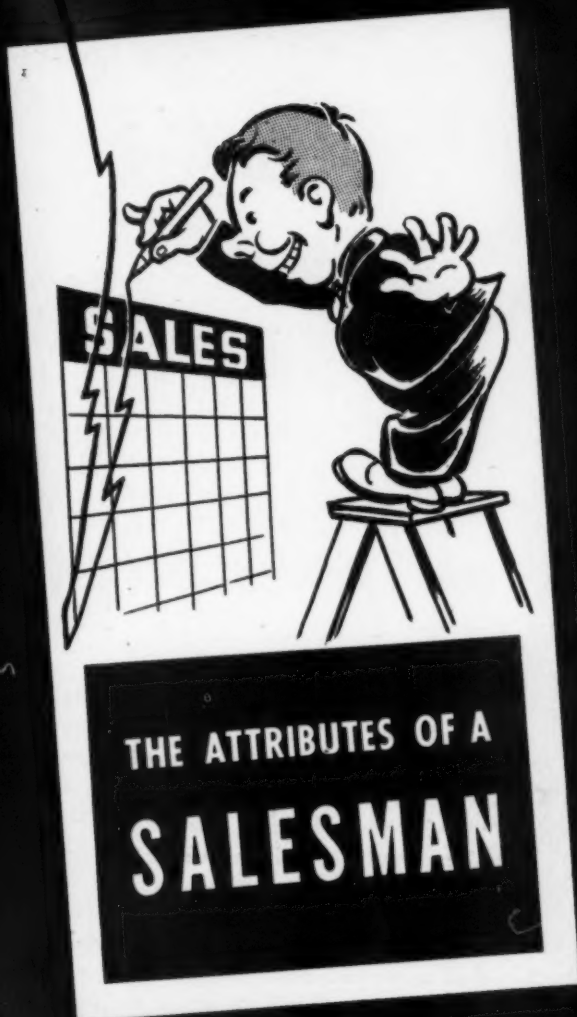
Hundreds of new salesmen are entering the field . . . and old-timers are brushing up and dusting the rust off their techniques.

To help both of these -- the newcomers as well as our old standbys -- we have written and published a booklet with the hope that it may contribute in some measure to the progress of the warm air furnace industry . . .

"The Attributes of a Salesman" . . . and its purpose is to increase the "sells-manship" of warm air heating equipment (any warm air furnace -- not only the MOR-SUN Pressed Steel line).

If you would like a copy (or copies for your present and future salesmen), drop us a line. There is no obligation of any kind.

P. S. By the way, the MOR-SUN Dealers Sales Manual will soon be off the press. Get your reservation in now!



**MORRISON**  
STEEL PRODUCTS, INC.  
BUFFALO 7, N. Y.

"The Sun Never Sets with MOR-SUN!"



**A  
TIMELY  
TIP...**

*on some mighty profitable business*

Never before has the demand for stainless steel equipment been as great as it is today. And never before has there been such a wide open opportunity for sheet metal contractors to firmly establish themselves as stainless steel specialists.

The advantages of being a stainless steel specialist are both plentiful and profitable. You get away from the work and headaches of strictly price competition. As your specialist reputation grows, you will find more and more business *coming* to you. And because of its "quality" nature, stainless steel work should provide a higher margin of profit than any other type of sheet metal fabrication.

Remember that you don't need expensive, special equipment for fabricating Republic ENDURO Stainless Steel. And if you have any questions regarding the proper methods of working or welding stainless steel, you will find complete, informative answers in Republic's two books: "The Fabrication of Republic ENDURO Stainless Steel" and "The Welding of Republic ENDURO Stainless Steel." Both books are FREE to sheet metal contractors. For copies of either or both, write to:

**REPUBLIC STEEL CORPORATION**

*Alloy Steel Division • Massillon, Ohio*

**GENERAL OFFICES • CLEVELAND 1, OHIO**  
Export Department: Chrysler Building, New York 17, N. Y.

Republic



ENDURO STAINLESS STEEL

Reg. U. S. Pat. Off.

Other Republic Products include Black, Galvanized, Galvalume and Electro-Plated Sheets — Various Iron Sheets

# SEIAKY

## FORGING PRESSURE IN

rating:

150 KVA at 50% duty cycle. Single phase alternating current of one voltage and one frequency. Power supply may be 440 or 220 volts, 60, 50 or 25 cycles, according to the user's specifications.

## performance:

**CAPACITY:** As a projection welder—6 projections on .080" plus .080"—distance between welds  $\frac{3}{4}$ "; projections in accordance with RWMA standards. Maximum current on secondary side, 31,000 amps. with a distance of  $11\frac{1}{2}$ " between arms. As a spot welder—(electrode holders optional equipment) stainless or clean mild steel from .032" plus .032" up to and including .187" plus .187".

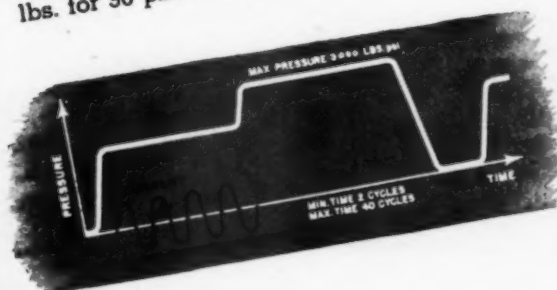
**SPEED:** 180 welds per minute on .032" plus .032" pickled mild steel.

**THROAT DEPTH:** 18" from center line of welding ram to face plate.

**CLEARANCE BETWEEN ARMS:** Lower arm adjustable over a range of  $11\frac{1}{2}$ ". Maximum working space between arms 21".

**ELECTRODE STROKE:** Adjustable stroke, retractible head, permits a working stroke of  $\frac{1}{2}$ " with foot controlled retraction to give a total opening up to  $2\frac{3}{4}$ ". Selection of constant working stroke, or working stroke with retraction is through toggle switch mounted on control panel. The retraction feature is designed for spotwelding. It may also be used for projection welding if desired.

**WELDING PRESSURE:** Maximum 3000 lbs. for 90 psi. line pressure.

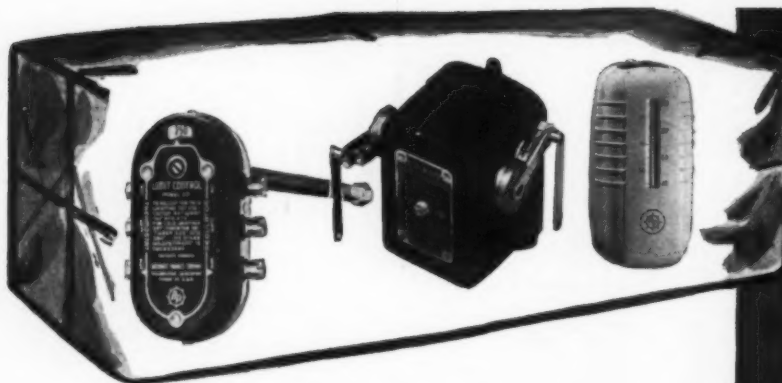


## YOUR WELDING PROBLEMS



# PMCOI-9

projection  
welder



## Your Profit Package for every furnace in town

**... a complete, easy to sell  
Automatic Heat Regulator Set  
that saves steps, fuel and time**

Present day needs of hand-fired heating plants call for fuel-saving, efficient, automatic heat regulators. Dealers with an eye to future sales and profits will feature and install **DEPENDABLE A-P Heat Regulator Sets** this season. Every customer who hand-fires his furnaces and desires healthy, comfortable uniform home heating is a live prospect. It is easy to sell him this complete, automatic fuel-saving set for his hot air, steam or hot water heating plant.

**Installation Kit...** A-P Automatic Heat Regulator Set is shipped with a complete installation kit — pulleys, screws, conductor cables, staples, chain and transformer.

**TO HELP YOU SELL**—merchandising aids including display cards, three-color sales presentation books, consumer folders and newspaper mats are available.

**AUTOMATIC PRODUCTS COMPANY**

2470 N. Thirty-second Street; Milwaukee 10, Wisconsin



### These Three Dependable Controls Assure Satisfied Customers

#### **Thermostat**

Convenient, easy-to-read setting controls room temperature within 1°. Actuates damper control. Easy to install. Ivory-tone cover contains accurate thermometer.



#### **Limit Control**

This safety control prevents furnace heat from going above thermometer setting by actuating Damper Regulator. Dial can be set according to seasonal temperatures to prevent overheating and fuel waste. Limit Control available for hot air, steam and hot water heating plants.



#### **Damper Regulator**

This compact regulator operates both draft and damper. A sturdy unit—exceptionally quiet in operation—requires no servicing. Corrosion resistant metals prevent summer rust.



# DEPENDABLE Controls

FOR HEATING

• AIR CONDITIONING

• REFRIGERATION

# STOKOL

## MARKETS

-from a five-room cottage  
to a 15-floor apartment

STOKOL dealers find that practically any prospect for a Stoker is a prospect for a STOKOL Stoker. The wide range of models and capacities using all types of coal meets just about every heating requirement. The combination of STOKOL Stoker performance and prospective customers offers great profit possibilities to STOKOL dealers. Why not join them? Send the coupon today. STOKOL STOKER Company, Inc., Indianapolis 7, Indiana.



**STOKOL**  **STOKER CO., INC.**  
1145 E. 22ND ST., INDIANAPOLIS 7, IND.

Gentlemen: Send details of Stokol profit possibilities for me as a dealer.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_

# DU PONT EXPLOSIVE RIVETS

Here's how these fast-working fasteners

*... simplify design*

*... speed production*

Du Pont Explosive Rivets aren't something new. Hundreds of millions have been used in America's famous fighting airplanes ... the B-29, Corsair, Martin Bombers and scores of others. They helped simplify design ... speed construction.



## What These Fasteners Are

Explosive Rivets are just what the name implies. They are fastened in place by expansion of a small explosive charge in the Rivet shank. Instead of using pneumatic hammer and bucking bar (a 2-man job), these Rivets are easily set by one operator.



Cross Sections of Unexpanded and Expanded Rivets

## How Explosive Rivets Work

After Rivets are in place, one person applies the tip of an electrically heated Du Pont Riveting Iron to the Rivet heads. Heat fires the charge ... expands the shank so that it completely fills the hole. A large barrel-shaped head is formed on the opposite end of the Rivet. This locks the Rivet securely in place. Result: a *strong, tight joint*.

## Improved Design for Peacetime Production

Explosive Rivets of a new and improved design\* now meet the needs of peacetime mass production. They're ideal

for high-speed blind riveting and all conventional fastening jobs. In many instances they permit simplification of designs and lead to more economical production. Strengths of these Rivets are only slightly less than corresponding solid rivets. Since Explosive Rivets have a neat, smooth appearance, no head-finishing operations are necessary.

(\*The improved Rivet has a straight cavity extending the entire length of the shank. This contains the charge. Result: expansion of the shank fills the hole completely. Close-fitting tolerances are unnecessary.)

## SIZES AND TYPES AVAILABLE

Head Types	Standard Diameters	Grip Lengths
Modified Brazier and Countersunk	1/8" 5/32" 3/16"	1/8" (for thicknesses up to 1/8") 1/4" (for thicknesses from 1/8" to 1/4") 3/8" (for thicknesses from 1/4" to 3/8") 1/2" (for thicknesses from 3/8" to 1/2")
Other head types and diameters will be produced		
<b>MATERIALS</b> Explosive Rivets are made of various materials: Aluminum alloys: 17S-T, 52S, and 56S (for magnesium sheet work), Brass, Copper, Mild Steel, Monel Metal and others.		



## 1 Easy to Insert

Du Pont Explosive Rivets are produced with standard diameters. Because the entire rivet shank expands, close hole tolerances are not required. This saves time ... assures a better job.

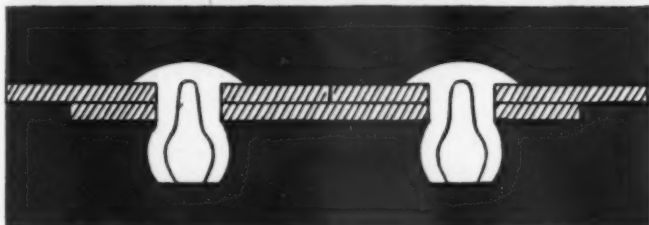
## 2 Quick to Set

The tip of a Du Pont Riveting Iron\*\* is brought in contact with the head of each Rivet. In from 2 to 4 seconds, depending upon size and type of Rivet, the shank expands to make a strong, tight joint. Couldn't be simpler.

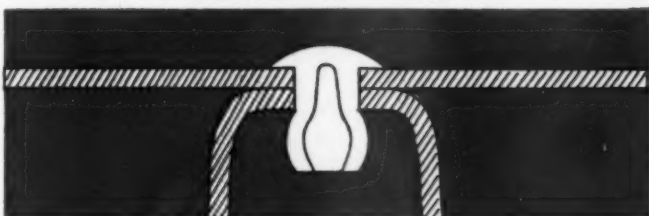
\*\*A riveting iron is available to meet your requirements.

# ...now ready for peacetime use

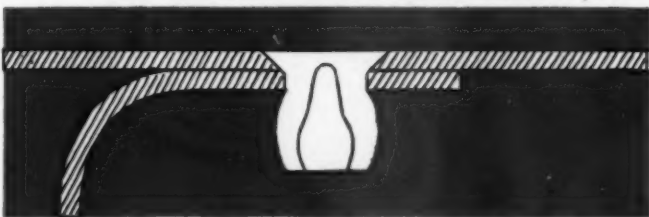
## TYPICAL APPLICATIONS



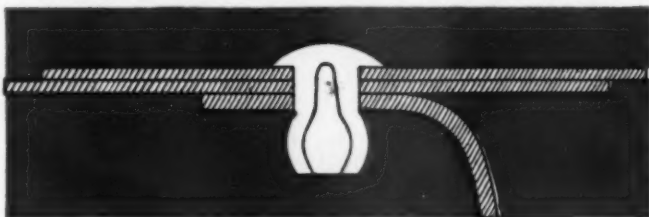
Butt joints, straight or over T-sections.



Fastening sheets to hat sections, tubes, ducts, posts.



Joints fastened from one side with countersunk rivets.



Lap joints fastened to ribs.



Fastening sheets to tubes, ducts and similar channels. Tough jobs are made easy.

## DU PONT EXPLOSIVE RIVETS

## Every Industry Can Use These Speedy Fasteners

### AUTOMOTIVE

—Construction and maintenance of chassis, bodies, accessories, parts.

### REFRIGERATION

—Cabinet construction for farm and home freezers, locker plants, commercial refrigerators.

### HOUSING

—Construction of pre-fabricated houses. Attaching panels, trim and other similar jobs.

### AIR CONDITIONING

—Construction and sealing of ducts.

### HEATING, VENTILATING

—Fabrication of furnaces, stokers, housings, etc.

### RADIO, TELEVISION

—Chassis work, sealing units, cabinet construction.

### BOAT BUILDING

—Assembly of small craft; ducts and compartments aboard larger ships.

### RAILROAD CARS

—Passenger and freight. Interior panels, accessories, air conditioning systems, refrigerating units.

### METAL FURNITURE

—General assemblies, filing cabinets, desks, tables, chairs.

### HOUSEHOLD APPLIANCES

—Washing machines, ironers, toasters, etc.

### NAME PLATES

—Explosive Rivets hold the plate firmly and permanently in place.

E. I. DU PONT DE NEMOURS & CO. (INC.)  
EXPLOSIVES DEPARTMENT, WILMINGTON 98, DEL.

**DU PONT**

REG. U. S. PAT. OFF.

**CLIP and MAIL This Coupon  
For Additional Information**

Pin coupon to letterhead and, if possible, give the details requested below:

- (1) Type of product
- (2) Materials to be fastened
- (3) Total thickness to be fastened
- (4) Type and size of fastener now used
- (5) Approximate annual requirements.

Name \_\_\_\_\_

Title \_\_\_\_\_

AM-1

# In six leading magazines



**FORCED-WARM-AIR HEAT** deserves a place at the top of every home planner's list. Certainly, no other heating system—pay matter, no other item in the home—pays bigger dividends in year 'round comfort, convenience and over-all economy.

**AUTOMATIC CONTROL** of temperatures assures indoor comfort, regardless of how cold it may be outdoors. And your forced-warm-air system can add to your comfort in summer (by circulating cool night air through the house at the end of a hot day).



**HIGHLY EFFICIENT** and economical, a forced-warm-air system is noted for its clean, thrifty heat. You'll be delighted at how little it will cost you to operate. Delighted, too, at how clean your home stays—saving work and redecorating costs.

**YOU'LL FIND** forced-warm-air units available for every type of home—for use with every type of fuel. If you are planning to build, buy or remodel—tell your architect, builder or heating contractor you want the advantages of clean, warm-air heat.

**DUST-STOP® AIR FILTERS** are standard equipment in most modern forced-warm-air units. Replacements at low cost, available in every community. Dust-Stops are a product of Owens-Corning Fiberglas Corporation, 51-8P, Nicholas Building, Toledo 1, Ohio. (In Canada, Fiberglas Canada Ltd., Oshawa, Ontario)



**DUSTSTOP**  
Air Filters  
a FIBERGLAS® product



Better Homes & Gardens

AMERICAN HOME

We're again **TELLING** and



For your greater comfort, convenience and thrift, put a forced-warm-air heating system at the top of your list of "must-haves". Forced-warm-air heat is economical heat—clean heat. It will reduce house cleaning work, save redecorating costs—will help to keep your furnishings attractive and make them last longer.

Automatic temperature control is another forced-warm-air heating advantage you'll appreciate. Think of the steps it will save—and the added comfort it will give you. Sensitive to temperature changes, it will keep your home uniformly warm, when desired. Yet, you can set the thermostat for nighttime fuel saving and still have a warm house when you arise.



Forced-warm-air heat is efficient heat. And the Dust-Stop® air filters (used in most modern systems) help keep it highly efficient. They screen dirt and lint out of the system while permitting the free circulation of clean, warm air. When filled with dust and lint, the filters are replaced easily, quickly and at very low cost, with clean new Dust-Stops.



... clean efficient Dust-Stop ...



reaching nearly  
**10,000,000 READERS**

**SELLING** *the advantages of Forced-Warm-Air Heat*

The makers of DUST-STOPS\* are at it again—pulling a long, strong oar in behalf of the forced-warm-air heating industry.

Starting in the October 20th issue of the Saturday Evening Post—and November issues of *five* other popular, large-circulation magazines—powerful, colorful advertisements are telling and selling the advantages of this better winter air conditioning to American Homemakers.

Part of a comprehensive, long-range program, this advertising will continue month after month well into the summer. It will help focus consumers' attention on this truly modern type of home air conditioning. Most important of all, it will help you—and all in the industry—sell warm-air heat to builders of new homes and to other folks who are remodeling.

\*T. M. Reg. U. S. Pat. Off.

**OWENS-CORNING  
FIBERGLAS CORPORATION**

*"Your partner whose  
Actions speak louder than words"*



*Combustioneer* PROSPECTS ENTHUSE  
*Dealers say-* OVER AND BUY THIS...

# STOKER with FIRE-BED that "BREATHES"

Hard-headed dealers will tell you how they enthuse over the ease of selling Combustioneer with its powerful and completely convincing demonstration of coal-burning efficiency that no other stoker can possibly begin to duplicate.

They'll tell you how prospects soften up quickly because it's so easy to understand how Combustioneer's exclusive features of impulse coal-feeding and of air volume metering for scientific combustion result in more heat from every pound of coal.

No ordinary stoker can begin to compete with the sales wallop that Combustioneer packs in its features which loosen and keep the fire-bed free-burning and which force a measured volume of air around every burning particle of coal. When they get this demonstration, prospects enthuse—and buy.

## ALL THIS AND "PROSPECT-FINDERS" TOO

Combustioneer's great and complete product line is backed with national and local advertising and a comprehensive array of field-proved materials for ferreting out and selling prospects. Still open to aggressive dealers, in certain areas, is Combustioneer's profit-making franchise. Wire or write for details today.



### A MODEL FOR EVERY HOME AND COMMERCIAL NEED

Combustioneer Home Models (including the DeLuxe Bin Feed) for homes from 4 to 14 rooms. Commercial Models ranging in size for capacities from 75 to 1200 lbs. of coal per hour.



Cash in THIS YEAR with

# Combustioneer

## AUTOMATIC COAL STOKER

THE STEEL PRODUCTS ENGINEERING CO.  
 1237 West Columbia Street, Springfield, Ohio  
 Designers, Engineers and Manufacturers of Precision Products Equipment

**THE  
SHEETS  
THAT  
DO  
THE  
JOB**



Now's the time for replacements and repairs on furnaces, piping and ductwork. And now's the time to team up with dependable, reliable Bethlehem Galvanized sheets.

They'll do the job, and satisfy you and your customers. Uniform in gage and size, tightly coated with high-grade zinc, these galvanized sheets are ductile, easy to form, seam, bend, solder. You can trust Bethlehem sheets. Convince yourself, if you haven't already, by giving them a trial.

**BETHLEHEM  
Galvanized  
STEEL SHEETS**

**BETHLEHEM STEEL  
COMPANY**

General Offices: Bethlehem, Pa.

*Bethlehem Steel Export Corporation  
New York*





# Explore

## THE NEW

### PROFIT POSSIBILITIES

### OF THE KRESKY

### OIL FLOOR FURNACE

**O**riginators of the oil burning floor furnace, KRESKY is still the only oil fired floor furnace with forced air circulation bearing the Underwriters' label. Available in either the dual wall or floor register type. The patented KRESKY burner produces clean, smokeless flame and intense heat with exceptional fuel economy. Manual or automatic thermostatic control. Simple in design . . . trouble-free in operation. Easily installed . . . requires as little as 30 inches clearance below floor. Available in 4 sizes. Backed by a 35 year reputation for dependability in the oil burner field.

**DEALERS:** The KRESKY money making line also includes complete forced air furnace units, range burners, hot water heaters and space heaters. Write for details of the attractive KRESKY dealer plan.

#### KRESKY MANUFACTURING COMPANY

*Pioneers in Oil Burning Equipment Since 1910*

PETALUMA

CALIFORNIA



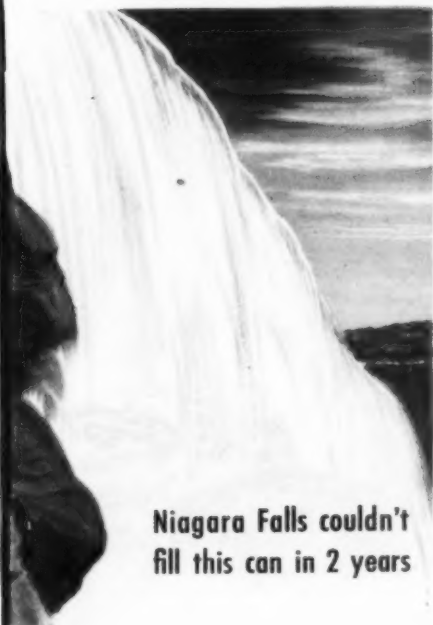
Listed and Approved by  
Underwriters' Laboratories, Inc.  
To Burn No. 3 Oil  
(Diesel) or lighter



**OVER 75,000 KRESKY OIL BURNERS INSTALLED**



## Did you ever see a tin can 7 miles high?



Niagara Falls couldn't  
fill this can in 2 years

Imagine a can towering 7 miles into the stratosphere, with a base broad enough to cover downtown Pittsburgh—a container of such gigantic capacity that all the water roaring over Niagara Falls in 2 years couldn't fill it.

The billions of square feet of material required to build such a can represent the annual tin plate capacity of Weirton Steel Company, the largest independent producer of tin plate in the world.

This large demand for Weirton tin plate, like the extensive market for

Weirton's many other products, is the natural result of Weirton Steel Company's rigid control of quality in all manufacturing operations.

Weirton has the facilities for quality. Its management, with constant emphasis on advanced steel making practice, has been an international factor in progressive industrial thinking. And, its completely integrated steel mill is an outstanding example of what modern equipment can mean in maintaining strict product standards.

**WEIRTON STEEL CO.**

Weirton, West Virginia

Sales Offices in Principal Cities

DIVISION OF NATIONAL STEEL CORPORATION





*On His Way--*

This go-getting gentleman is a Specialist in WINTER WARMTH and SUMMER COOLNESS. He's a Viking Contractor-Dealer - - - and HE KNOWS WHERE HE'S GOING.

He uses his time and his major effort for his specialty—the job he can do better than anyone else—the year round business of estimating, selling, installing, and maintenance of Viking heating, cooling and air-conditioning equipment. He has turned over the expensive and time-consuming details of purchasing, warehousing, delivery, material-scheduling and sales financing to his Viking Distributor.

He will tell you that his best friend is the Viking Distributor. He has measured the advantages of Viking's firm policy of SALES THROUGH DISTRIBUTORS ONLY. He is enthusiastic about his Viking Distributor's PROTECTED DEALER PLAN. With Viking, he has found the way to a successful and profitable future.

*Write today for the details and the name of the Viking Distributor in your territory.*

## *Here's How*

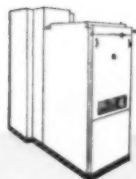
A few of the advantages of the Viking Distributor Plan

1. The Viking Distributor purchases and warehouses every item needed for the complete job—Viking equipment—sheet metal—duct work—trim, registers, etc.
2. The Distributor works with the Dealer on material scheduling—delivering material only as the job progresses—as the Dealer needs it. Dealer saves inventory space and expense.
3. Distributor maintains attractive displays of Viking equipment in his sales rooms—helps Dealer show and sell the correct unit and capacity for each job.
4. Distributor provides the services of a Viking Sales Engineer to assist in estimating and promoting major sales projects.
5. Distributor advises and assists Dealer in his advertising and promotional program.

## VIKING MFG. CORPORATION

1747 CHESTER AVE. CLEVELAND, OHIO

U. B. BUILDING, DAYTON, OHIO



Year 'round Air Conditioners



Floor Furnaces



Furnaces



Space Heaters



Boilers



Room Coolers



Vik-O-Matir Stokers



Utility Room Furnaces



Conversion Burners



Water Heaters



# Key

to a lower net cost for a  
better  
product

## Use

# Weirzin

ELECTROLYTIC ZINC COATED SHEETS  
AND STRIP • PLAIN OR BONDERIZED

*eliminates* inventory loss

*due to*

*RUST*



Weirzin offers you a *major business advantage*. It enables you to manufacture a *desirable better product* at an appreciably lower net cost.

**ONE SAVING . . .** The high corrosion resistance of Weirzin means a substantial saving in inventory, *plus* reduced cleaning costs and the *elimination* of pickling and buffing operations.

**ANOTHER SAVING.** Because of its extremely tight malleable coating and highly ductile base sheet Weirzin takes deep drawing and severe fabrication without damage to its protective surface—and retains its excellent base for subsequent finishes . . . *and* because it is available plain or Bonderized in coils up to 35" widths Weirzin lends itself to fast, automatic production equipment . . . Write for test sample.

**WEIRTON STEEL CO.**

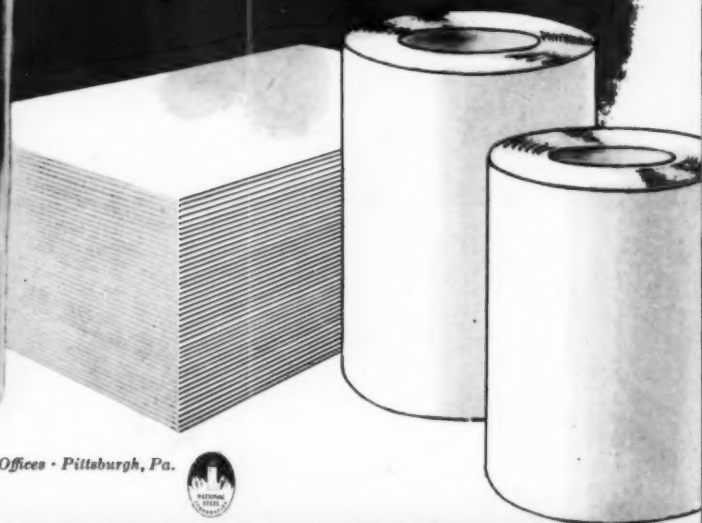


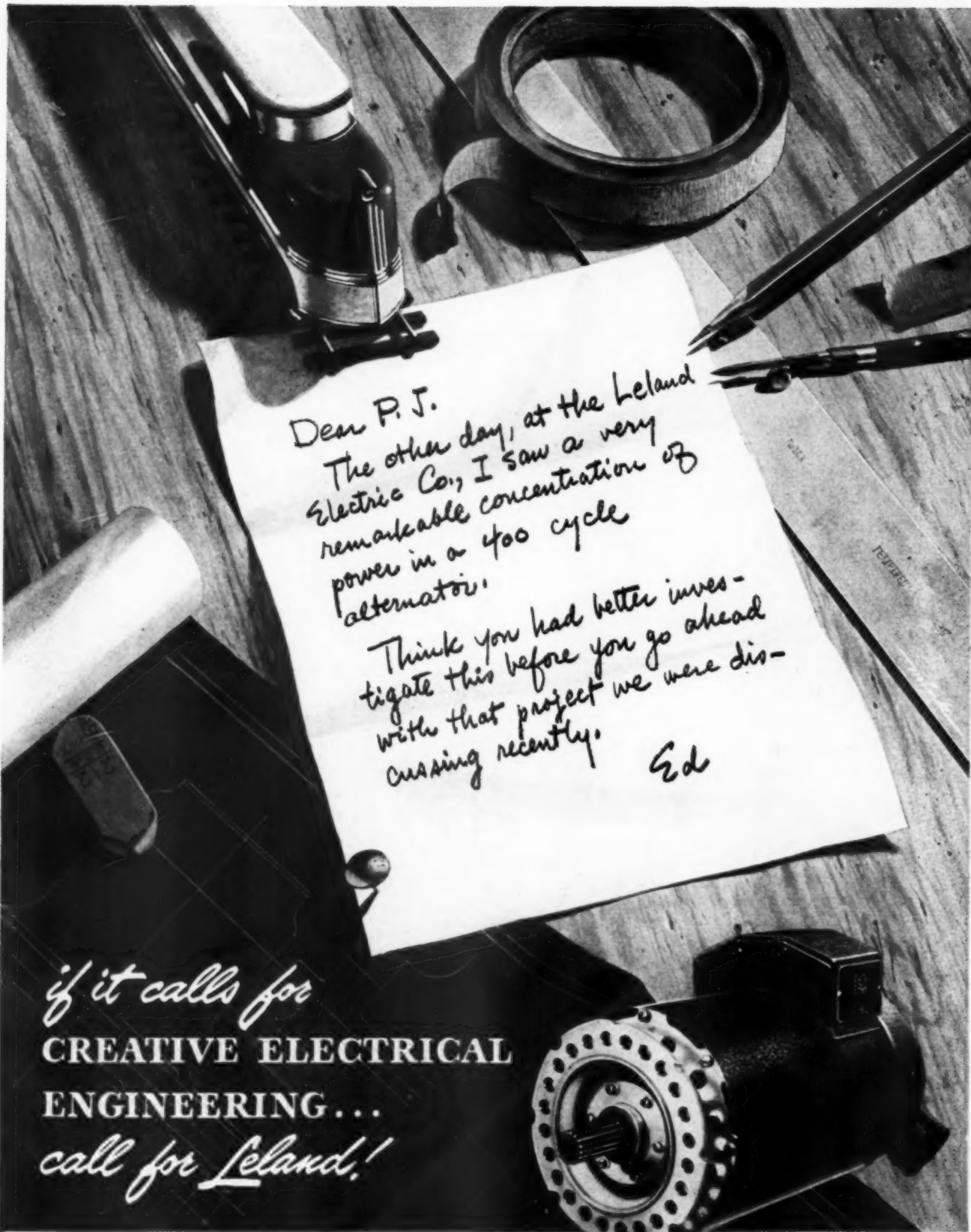
WEIRTON, W. VA.

Division of NATIONAL STEEL CORPORATION Executive Offices • Pittsburgh, Pa.



and  
cuts pickling, cleaning,  
buffing





Dear P. J.

The other day, at the Leland Electric Co., I saw a very remarkable concentration of power in a 400 cycle alternator.

Think you had better investigate this before you go ahead with that project we were discussing recently.

Ed

*if it calls for*  
**CREATIVE ELECTRICAL  
ENGINEERING...**  
*call for Leland!*

Motors, Generators, Motor Generators and Voltage Regulators



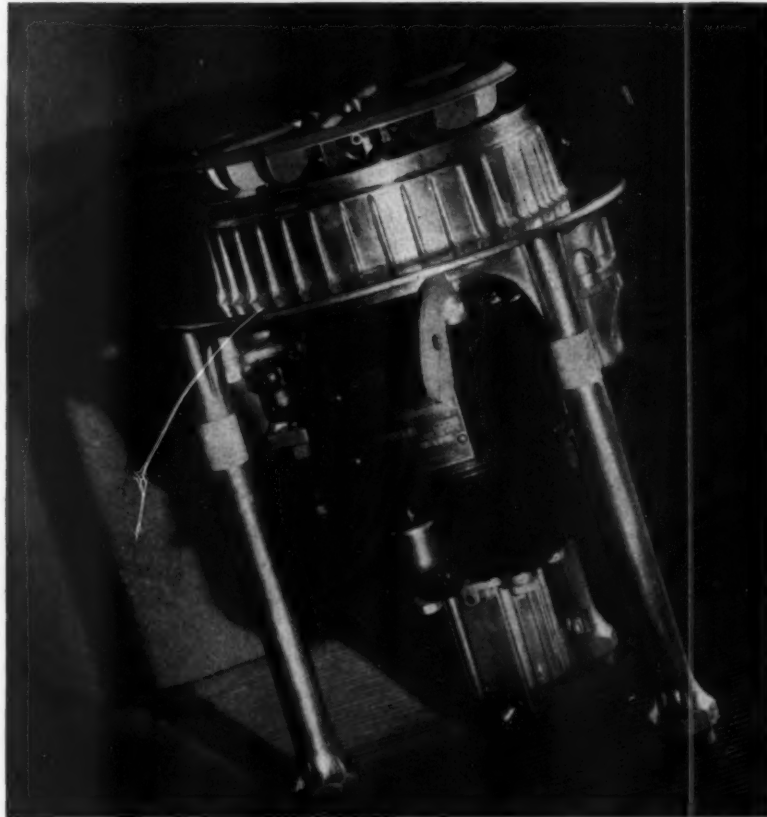
**THE Leland ELECTRIC COMPANY**

DAYTON, OHIO • IN CANADA, LELAND ELECTRIC CANADA, LTD. . . GUELPH, ONTARIO

*On its War Record*

# **The TORIDHEET ROTARY BURNER**

**STANDS OUT FOR ECONOMY AND RELIABILITY**



Long years of war proved three things about the Toridheet Rotary Burner that both users and contractors will long remember.

1. Oil rationing magnified the amazing efficiency and economy of the Toridheet Rotary Burner.
2. Toridheet users never worried about either fuel or temperature.
3. Heating men, at a time when their service organizations were depleted, found Toridheet Rotary Burners completely dependable—almost service-free.

Toridheet does more with less attention—works longer and better with less service. So, as you prepare now for heating profits, get in touch at once with the

## **TORIDHEET DIVISION**

CLEVELAND STEEL PRODUCTS CORPORATION, CLEVELAND 2, OHIO

**OIL BURNERS • OIL BURNER BOILERS • OIL WATER HEATERS  
AIR CONDITIONING UNITS • COAL AND GAS FURNACES**

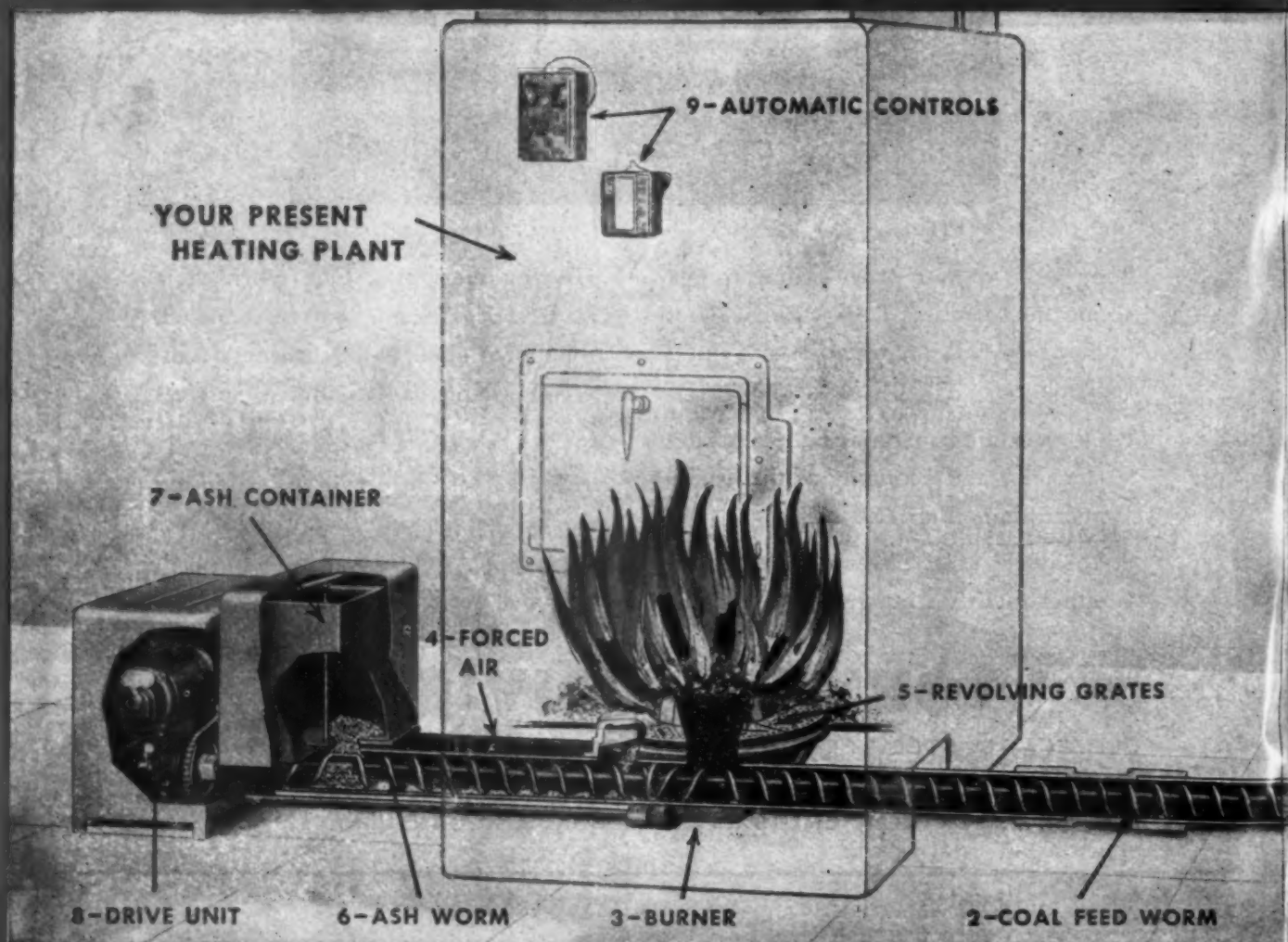
# FEEDS COAL & EMPTIES

*The exclusive stoker that will make*

● In this postwar period when tremendous competition is certain to develop, what better protection can you have, Mr. Stoker Dealer, than an exclusive Pocahontas Franchise for the stoker that has made bituminous coal a completely automatic fuel by eliminating back breaking coal shoveling and disagreeable clinker digging? With over ten years of manufacturing and field experience, thousands of satisfied customers gladly testify as to the merits of the Pocahontas Stoker. If you have not already done so, now is the time to investigate the possibilities a Pocahontas dealership offers.

## **POCAHONTAS FUEL COMPANY INCORPORATED**

**Stoker Division • 338 East 131st Street • Cleveland 8, Ohio**



S  
ke

# OWN ASH

## money for YOU

1. Rotary coal collector eliminates alterations to present bin.
2. Feeds low cost, fine sizes of coal—always available.
3. Burner made of chrome nickel alloy—high heat resisting.
4. Air adjustments are easy to make.
5. Revolving grates sift ashes to ash table.
6. Ash worm automatically removes ashes.
7. Sealed ash container provides for clean storage of ashes.
8. Drive unit extremely quiet. Direct drive—no belts.
9. Minneapolis-Honeywell Controls including patented stoker pilot.

"We have two 'O. P.' Stokers, the first purchased in 1936, the second in 1937. They have proved satisfactory in every way."

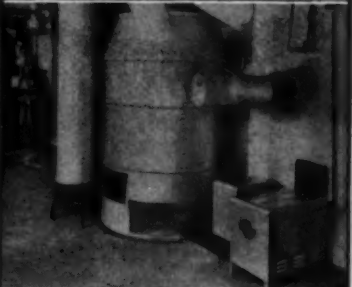
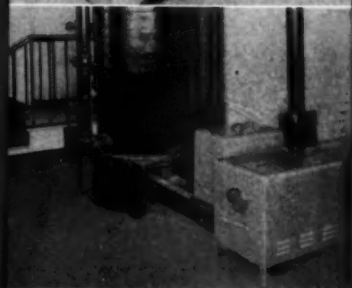
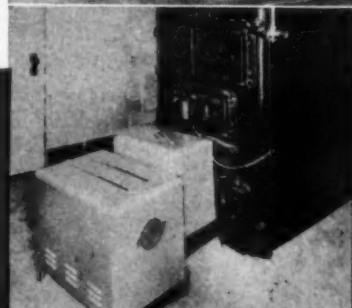
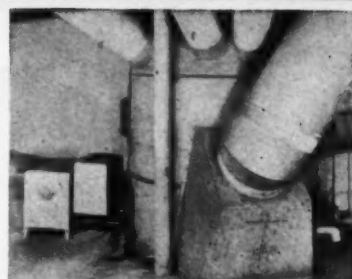
"A valued servant—one that doubled my comfort while reducing labor 97%. Saved 146 trips per month to the basement, reduced my heating cost 23%."

"After four years I am still as enthusiastic as when I first wrote you about my experiences with the Pocahontas Stoker."

"You have absolutely controlled heat. It's most economical—coal is conveyed automatically, ashes are removed mechanically."

"For the first time in 15 years our house has been nice and warm on the north side. We are very enthusiastic over our Pocahontas Stoker."

"It gives me genuine pleasure and complete satisfaction. There is so little labor required that I wouldn't part with my Pocahontas for a thousand dollars."



1-ROTARY COAL COLLECTOR

# POCAHONTAS

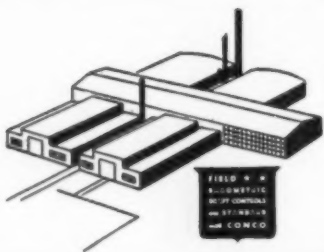
THE FIRST SUCCESSFUL BITUMINOUS  
BIN-FEED ASH REMOVAL STOKER



## *Invitation*

*to a man with a "one track mind!"*

If your one BIG aim is to SELL the finest HEATING LINE made — and SELL IT HARD — and if your enthusiasm "sparks" a large, aggressive sales organization, then *you're* a distributor we've been waiting for, and *we're* the company for you. For we have a new STOKER that leads the field in quality, beauty and *sales-appeal*, backed up by a complete heating line. We've held open a few territories for distributors with your "git-up-and-go." So won't you write us today? Our line, our company, our aggressive merchandising policies will appeal to a man who "makes no little plans."



### BUILDERS OF A COMPLETE HEATING LINE

- DOMESTIC STOKERS      ● STEEL FURNACES
- COMMERCIAL STOKERS    ● OIL-FIRED AIRCONDITIONERS
- GAS-FIRED AIRCONDITIONERS

CONCO ENGINEERING WORKS • MENDOTA, ILLINOIS



IT'S  
THE NEW  
CONCO  
DOMESTIC  
STOKER

# THE "Best Sellers" ARE BACK FOR GOOD!

AT last, we are rid of War. And with it, rid of our obligation to build the tools of War. Now, happily we can build the tools of Peace once more. Yes, we are glad to say that Crescent "BEST SELLERS" . . . Crescent and "Crestoloy" Wrenches, Pliers, Screw Drivers, Snips and other tools . . . are coming back for good.

From now on, they will be showing up . . . in ever-increasing quantity . . . on the counters and display boards of America's better hardware stores. To the thousands of loyal dealers and users who have waited patiently for their Crescent Tools, we can now safely say: "Thank you, they're on their way."

**CRESCENT TOOL COMPANY**  
Jamestown, New York



**CRESCENT TOOLS**  
*Give Wings to Work*

# *Sure Cure*

FOR AIR-FILTERING HEADACHES



**Now . . . more than ever . . .  
it will pay you to keep  
customers happy with**

## *Detroit* AIR FILTERS

*The longer-lasting filters with wick action*

By every standard, Detroit Air Filters are just what the doctor ordered for your customers' air-filtering requirements.

Sold only through the warm air heating and refrigeration trades, Detroit Air Filters provide you with outstanding replacement type filters to protect your installations and assure regular repeat profits for you.

Here are the filters truly engineered to give most filtering service for the money. Controlled pro-

duction insures uniformity in construction and performance. Where other types are merely coated with adhesive, Detroit Filters are thoroughly impregnated for "wick-action" --- with so much more adhesive that dust capacity and filter life are materially increased at substantial savings in filtering costs.

No other filters combine all the structural and performance advantages of these longer-lasting units. Find out today how much more Detroit Air Filters can do for you.

Write for full details.

### *Detroit* AIR FILTER COMPANY

1228 West Kinzie Street, Chicago, Illinois

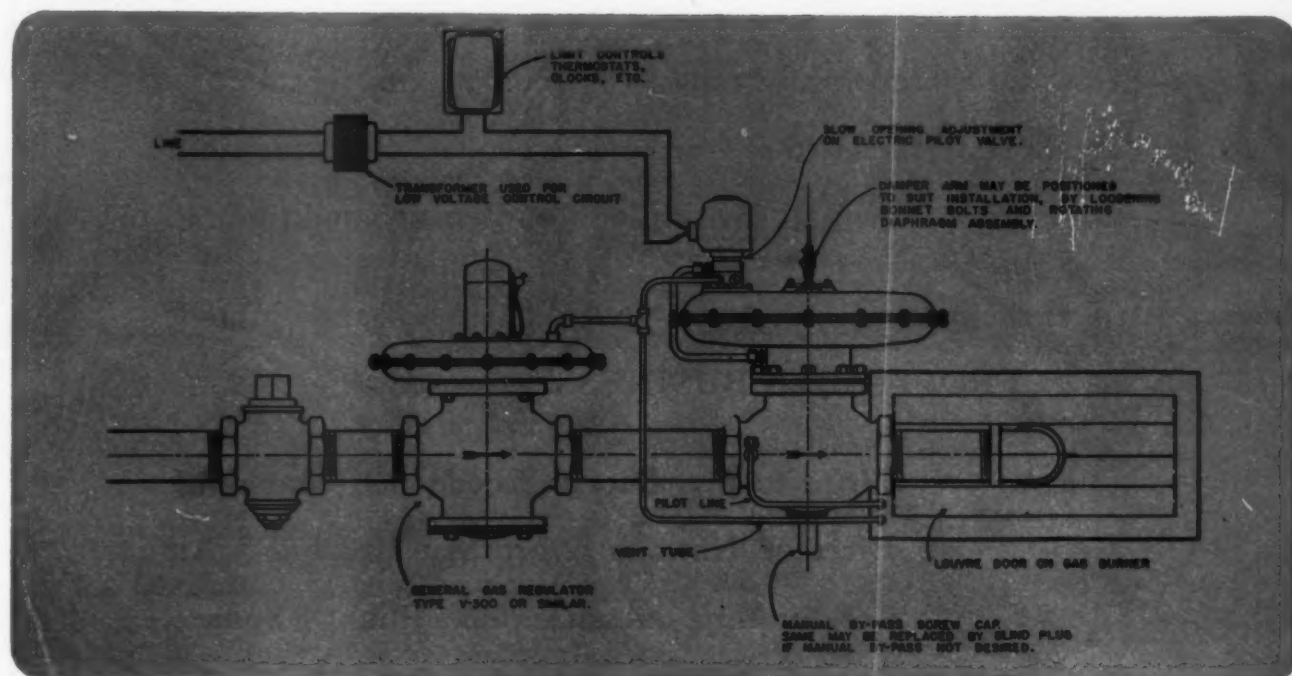
# General Controls **SLOW OPENING** Gas Valve B-55

## ELECTRO-MAGNETIC DIAPHRAGM TYPE

With a range of adjustable opening speeds between 5 and 60 seconds, Type B-55 Valve provides a dependable control where retarded action is desired. Changes in opening speeds are made by a simple adjustment on the pilot valve. But, to insure fast shut-off, closing time is fixed, regardless of opening adjustment. Closing time varies from 3 to 6 seconds after breaking electric circuit according to diaphragm size.



B-55 Slow Opening Valves are primarily gas-operated units equipped with integral, quiet A.C. Solenoid pilot valves. When damper control is incorporated, its operation is separate from the main valve stem so that the valve will close, even though the damper arm may be held up by an external object or friction. The valve draws a minimum of current. The B-55 is a single 2-wire control, available in either low or line voltage A.C. or D.C.



**Sizes— $\frac{3}{4}$ " to 6"—for manufactured or natural gas**  
**High gas capacities—gas operating pressures, 2" to 5 lbs.**

Various modifications of the B-55 Valve are made by General Controls to cover a wide range of services and conditions, as completely described and diagramed in our Catalog No. 52-B. Request a copy.

**GENERAL CONTROLS**  
 801 ALLEN AVENUE  
 GLENDALE 1, CALIF.

FACTORY BRANCHES: Philadelphia, Atlanta, Boston, Chicago, Dallas, Kansas City, New York, Denver, Detroit, Cleveland, Pittsburgh, Houston, Seattle, San Francisco. Distributors in Principal Cities.

# **PRESTIGE**

## **BUILDS UP YOUR**

# **PROFITS**

—and membership in the National Warm Air Heating and Air Conditioning Assn. builds up your prestige in your community.

—helps to more firmly establish your reputation among neighbors, friends and prospective customers as a recognized authority on warm air heating and winter air conditioning.

—helps you to build more business and **MORE PROFITABLE BUSINESS.**

—Write to Mr. George Boeddener, Managing Director, National Warm Air Heating & Air Conditioning Assn., 145 Public Square, Cleveland (14), Ohio, for full information about Dealer Membership

*THIS SPACE DONATED BY*

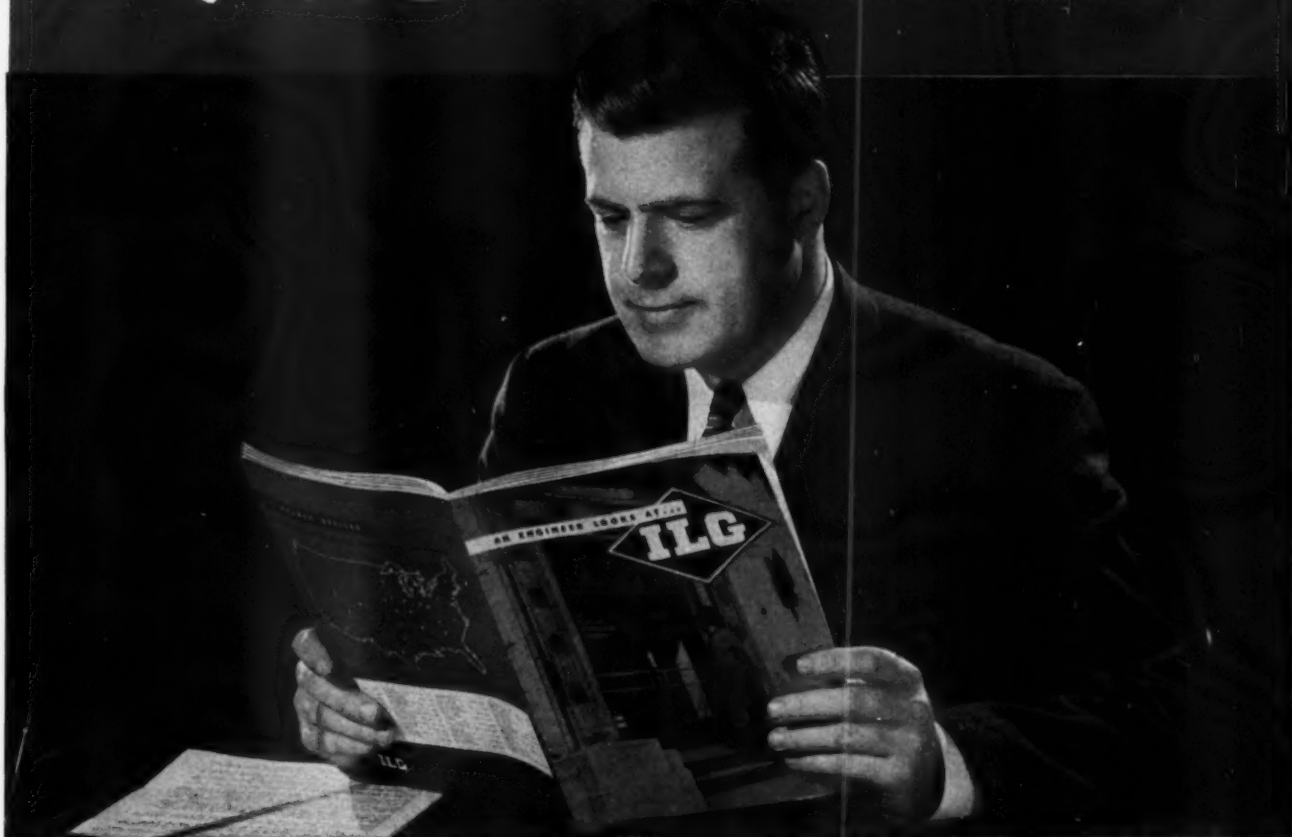
**HALL-NEAL FURNACE Co.**

**VICTOR Quality Furnaces Since 1890**

**1326 N. CAPITOL AVENUE • INDIANAPOLIS 7, INDIANA**

**WE BELIEVE IN AND BELONG TO NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSN.**

**FREE— GET YOUR COPY TODAY!**



**Take a quick trip through the ILG Plant**  
**...from your easy chair!**

Look through the eyes of a visiting engineer at the modern ILG Plant. Learn why ILG builds its own motors ... see the fascinating steps in the manufacture of different types of heating and ventilating equipment. Make a stop at the new ILG Research Laboratory ... meet the men who concentrate their skills on the development of better apparatus for you.

If you cannot visit the ILG Plant in Chicago, get a copy of this fascinating new photographic booklet. Send coupon or phone nearby Branch Office (consult classified directory).



**VITALIZED VENTILATION**  
 AND AIR CONDITIONING

**WANTED: GRADUATE ENGINEERS!**  
 for ILG Branch Offices, also Research and Engineering Departments. Exceptional opportunities now and in the future for graduates of accredited technical schools. Send details on education, experience, health, age, marital status.

**ILG ELECTRIC VENTILATING CO., CHICAGO 41, ILL.**  
 2871 North Crawford Avenue, Offices in 40 Principal Cities

☐ Send free copy "An Engineer Looks at ILG" Booklet.

Firm Name \_\_\_\_\_  
 Individual \_\_\_\_\_ Title \_\_\_\_\_  
 Address \_\_\_\_\_ Zone \_\_\_\_\_  
 City \_\_\_\_\_ State \_\_\_\_\_

*then they said to themselves*

**Boy!—did we build a business?**



Recommended for niches in the Hall of Shame are the leaders of the House of Heil.

—All ideologists of the New Day.

—All fluent of tongue.

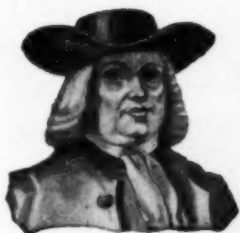
—All uttering words to dissuade men from honorable business tactics.

So their flourishing business came to the end of the road.

—recalling again the truth in the business advice of William Penn:

**"False dealing travels a short road...true worth is inevitably discovered."**

Timely precept, that. Many businesses will discover the true worth of techniques and equipment used in defeating the House of Heil . . . such as . . .



**"True Worth is Inevitably Discovered" *he says***

**LOOK**, how to discover the true worth of an arc welding machine:

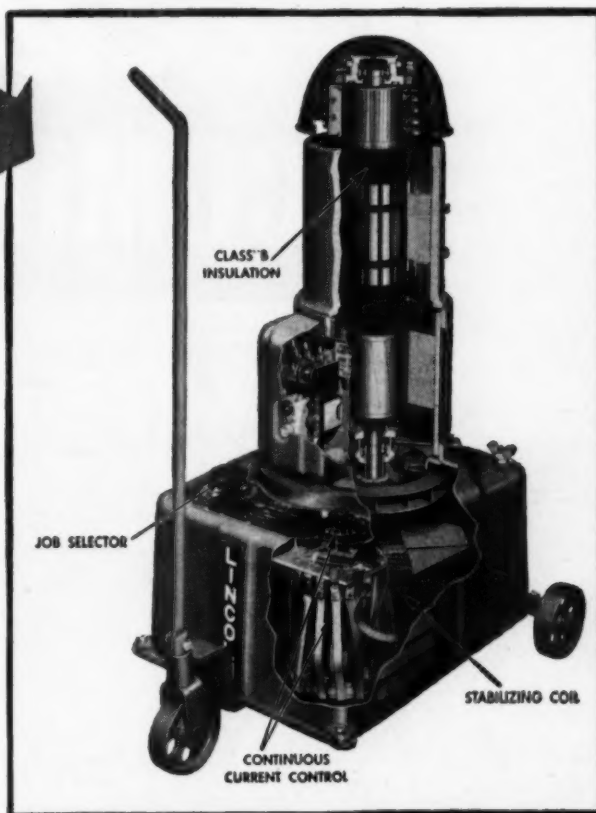


## Discover how THE "SHIELD-ARC JR." increases profits

**T**HE true worth of the "Shield-Arc Jr." Welder is found in its ability to produce better welds, faster, under all conditions . . . to enable you to apply arc welding to more of your business . . . *for greater profits*. Look inside and discover why . . . such exclusive features as:

**Dual Continuous Control** ("Job Selector" and Current Control) provides precision adjustment of any TYPE or SIZE of arc to suit the job. Makes it *easier* to weld thin sheets or heavy shapes . . . all metals and alloys.

**Stabilizing Coil** assures a smooth, pliable arc for *easy starting and welding* of tough



jobs for a wider range of *profitable application*.

**Class B Insulation** enables it to withstand sustained operation at high output for *faster welding*.

**All its features** are described in Bul. 308. Free on request.

THE LINCOLN ELECTRIC COMPANY • Dept. L-2 • CLEVELAND 1, OHIO

*America's greatest natural* **recourse**  
**ARC WELDING**

# *Luxaire* **COMING SOON!**



*Watch* this space for full details of Luxaire's NEW! Post War gas-fired air conditioning units and gravity furnaces which have—

**... New Beauty ... New Design**

**... Smart Styling ... Alluring Colors**

**... Sales Appeal**

These new units will comply with the new, stringent requirements of the American Gas Association.

These NEW Luxaire models are immeasurably better than pre-war units—easier to install . . . easier to service . . . and with longer life.

Complete details will be made available just as soon as possible.

**THE C. A. OLSEN MANUFACTURING COMPANY**

**ELYRIA, OHIO**

# HEAT LOSS STOPS HERE

*Fuel-Saving  
Starts With  
CONTROL*

## *Combustion Control System*

**WITH ITS EXCLUSIVE DRAFT REGULATOR PROVIDES THE ONLY COMPLETE CONTROL FOR HAND-FIRED HEATING**

● You need more than the "ordinary 3-piece damper operator set" to satisfy your customers' demands for greater comfort, convenience and fuel economy in hand-fired heating operation. You need the Combustion Control System . . . with its exclusive Draft Regulator.

This feature, available only in the Combustion Control System, practically eliminates heat loss up the chimney by automatically preventing excessive draft over the fire bed at all times. This means extra coal savings of 10 to 25% above what can be saved by mere automatic control of room temperature alone. The result — minimum trips to the basement . . . maximum economy, convenience and comfort.

Investigate this easily-installed, profit-making system today. Write your heating equipment manufacturer for additional information and his complete Merchandising Program to help you sell Combustion Control Systems under his trade name.

# Perfex

**CORPORATION**



500 W. OKLAHOMA AVENUE • MILWAUKEE 7, WISCONSIN

### **ONLY COMBUSTION CONTROL SYSTEM GIVES YOU ALL FOUR**

#### **AUTOMATIC CONTROL OF ROOM TEMPERATURE**

**1**

Exclusive Magic-Dial Thermostat provides accurate, uniform control of room temperature. Magic Dial varies length of "open damper" periods to meet individual comfort preferences and seasonal changes.



#### **AUTOMATIC CONTROL OF FUEL BURNING RATE**

**2**

Exclusive Thermo-Draulic Damper Operator automatically controls fuel burning in response to thermostat. "Fail-safe" feature protects against fire hazards in event of power failure.



#### **AUTOMATIC PROTECTION AGAINST OVERHEATING**

**3**

Precision Limit Control — the safety valve of the heating system — automatically checks fire before temperature can rise dangerously to waste fuel or damage the heating system.



#### **AUTOMATIC CONTROL OF DRAFT OVER THE FIRE**

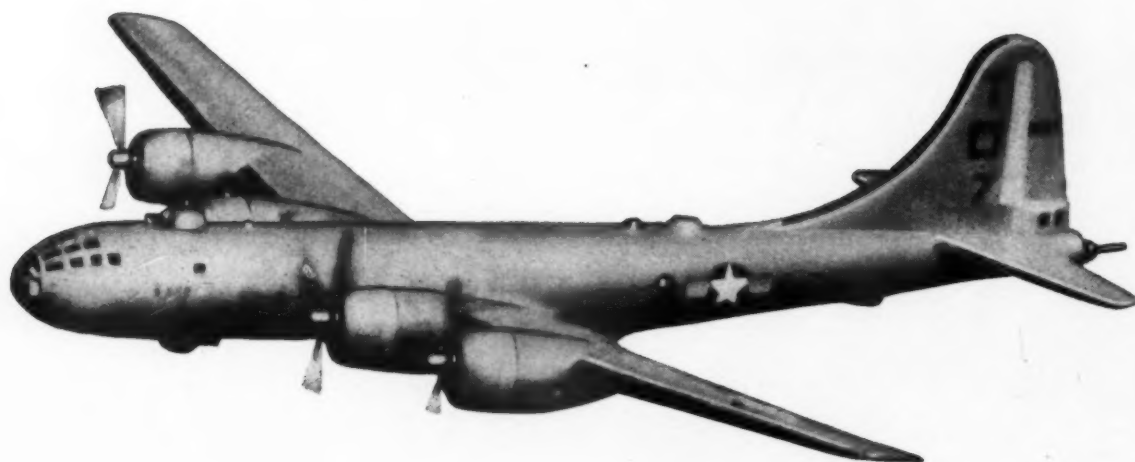
**4**

Exclusive Draft Regulator automatically prevents excessive draft over the fire bed regardless of outdoor conditions . . . checks heat loss up chimney . . . gives additional coal savings of 10 to 25%.



MANUFACTURERS OF AUTOMATIC CONTROLS BEARING TRADE-MARK NAMES OF LEADING PRODUCERS OF HEATING EQUIPMENT

# He finished the job on high-octane gas . . .



## now let's get down to earth about catalytic oil!

Catalytic oil is here—and it's probably here to stay!

America's tremendous demands for high-octane aviation gasoline brought this new type of domestic fuel oil into being.

It's *good* oil . . . with more BTU's per gallon than previously used types. *But . . .*

It's heavier, darker, with a lower hydrogen content and is slower burning. That makes it more difficult to use in domestic heating equipment.

But General Electric Oil-fired Boilers and Oil-fired Warm Air Conditioners are ready to take on the job! No complicated readjustments—no special preparation beyond the ordinary annual inspection.

The G-E method of burning oil—long

recognized as one of the most efficient means known—proves its merits anew with catalytic oil. Breaking each drop of oil into millions of tiny particles—surrounding each particle *completely* with air—the G-E method makes the oil easier to ignite . . . overcomes the drawback of higher flash point.

So . . . you can count on G-E Automatic Heating Equipment now installed in your territory to handle the new oil successfully. And if catalytic oil remains to the fore, remember these advantages when you sell new G-E equipment.

*General Electric Company, Air Conditioning Department, Section 55310  
Bloomfield, New Jersey.*

**BUY . . . and hold . . . WAR BONDS**

# GENERAL ELECTRIC

## *Automatic Heating Equipment*

DON'T SHIVER NEXT WINTER SAYS S.F.A.

..and don't swelter  
next summer!

says THE CHELSEA FAN



for  
OFFICE, HOME,  
FACTORY, PLANT,  
CHURCH, SCHOOL,  
THEATRE AND  
INSTITUTION



*Orders now being booked for '46 deliveries!*

Orders now being booked for '46 deliveries! The other side of the picture would say 'in winter, prepare for summer!' And now is the time to do it.

Whether for industrial, residential or institutional projects...CHELSEA will be able to meet your fan or ventilation needs early next year.

Do not delay—write for illustrated literature today. Determine your requirements and order promptly. Orders will be filled according to the date received.



**CHELSEA PRODUCTS**

INCORPORATED

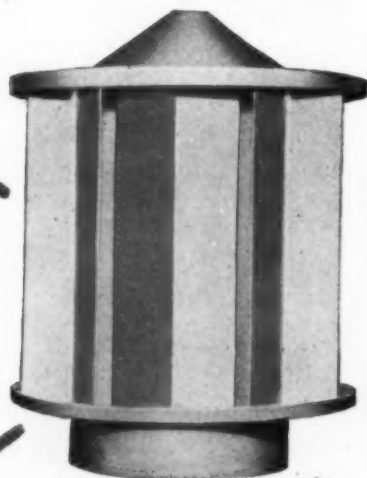
1206 GROVE STREET, IRVINGTON, NEW JERSEY



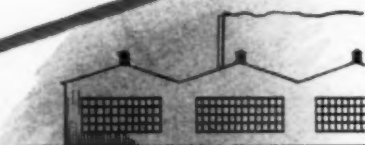
FANS • EXHAUSTERS • VENTILATORS • CIRCULATORS

BLOWERS

# HERE'S WHERE YOU'LL FIND BUSINESS with **AGITAIR** Exhausters



Recommend Agitairs as flue caps for oil or gas-fired equipment.



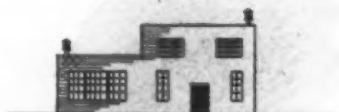
Agitair Exhausters for industrial ventilation and flue caps means big orders.



Easy installation, no maintenance — ideal for farm buildings.



Marine applications range from yachts and fishing craft to large cargo ships.



Bakeries, laundries, garages, etc., find Agitair the simplest ventilation.



Weatherproof cap for toilet vents, etc.

Because a breeze from any direction will suck hot air out through the Agitair Exhauster, and because it moves up to 50% more air at average 5 mph. wind, Agitair's applications in ventilation and flue capping are unlimited.

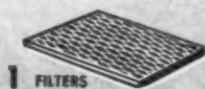
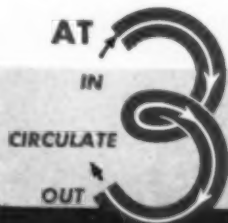
Tests conducted under conditions simulating roof tops prove that Agitair's correctly proportioned, venturi-action orifices move more air. Even when no breeze, Agitair's wide openings aid natural ventilation. A properly installed Agitair will not back-draft. It's weather-proof. No moving parts.

You will find Agitair the best exhauster to recommend and install. Why not talk it over with the nearest Air Devices, Inc. representative?

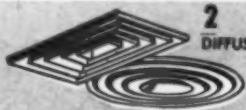
Send for new bulletin EX-101



AT **KEY POINTS IN AIR CONDITIONING—AGITAIR SERVES BEST**



1 FILTERS



2 DIFFUSERS



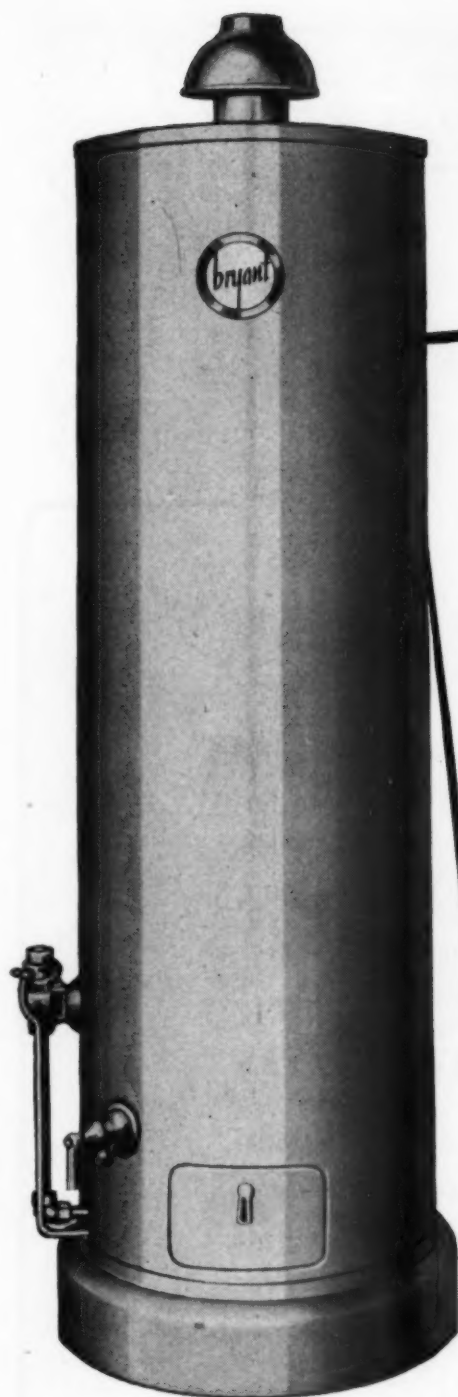
3 EXHAUSTERS



and also HOT WATER GENERATORS etc.

AIR DEVICES, INC. • 17 EAST 42nd STREET • NEW YORK 17, N. Y.

# NEW!



## Automatic Storage Water Heaters added to the Bryant Heater line

No doubt, it has come your way, too . . . that simple request so difficult to fulfill. "Give me a gas water heater as good as my Bryant home heating equipment," said the satisfied customer, "and you've made another sale!"

Certainly, that is a problem. But, not for much longer! Soon, you can supply water heating as well as home heating equipment bearing the famous Bryant name plate. Soon, the first Bryant Automatic Storage Water Heaters will begin moving off the production lines. And that means an extra sale of one of these modern models for you in almost every home where you sell Bryant automatic gas heating.

Consider the selling features of Bryant Water Heaters, too. They are completely automatic . . . super-insulated . . . flat-based for clean-around ease . . . give faster and cheaper heat transfer by passage of flue gases through a baffled tube centered in the water column . . . made in standard, de luxe streamline and table-top styles.

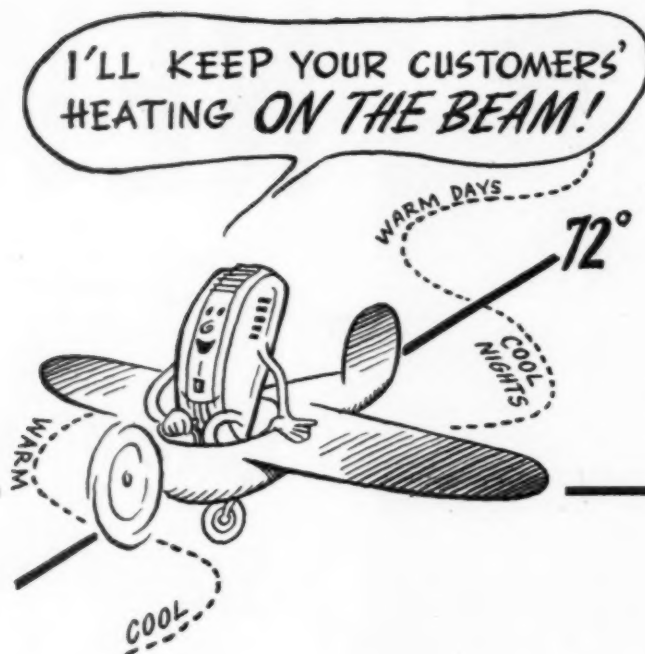
Americans know and prefer the home heating truly engineered to "let the pup be furnace man." Americans will welcome the same trouble-free service on their hot water heating job . . . as well as the man who sells Bryant Automatic Storage Water Heaters:

Bryant Heater Company, 17825 St. Clair Ave., Cleveland 10, O.  
*One of the Dresser Industries*

**bryant**  
**GAS**  
**HEATING**



LET THE PUP BE FURNACE MAN



**Up and Down Temperatures Waste Coal** — right now is the time to put a Crise Control on your customer's hand-fired furnaces, whether it's steam, hot water, or warm air. You'll help him save up to 20% of usual coal supply—you'll give him 100% all-winter heating comfort at a saving!

### Easy To Install — Big Profits For You

Crise quality Controls are engineered for simplicity of installation and operation. You can serve more customers in less time — make more friends. There's a generous margin of profit in each sale, yet Crise Controls are not a luxury. All your customers can afford them.

**SEE YOUR CRISE JOBBER AT ONCE**

*W. Lerch*  
Executive Vice-President





# CHANGING IS EASY--

IT'S MATERIALS THAT  
ARE HARD TO GET--

## WE'RE BACK IN "CIVVIES", TOO!

Thru the war, we worked round the clock at our regular job—building the finest heating equipment. But Uncle Sam took most of it. Our reconversion is mainly shifting customers! Yes, we're back in full time civilian production although materials and manpower problems limit quantity. Soon, however, dealers will be getting more adequate amounts of WEIR-MEYER Equipment that sets new standards.

Some territories are "open". Investigate the sales advantages that make a WEIR-MEYER distributorship or dealership so highly desirable. Write today!

### THE MEYER FURNACE CO.

Weir and Meyer Furnaces..... Air Conditioners  
for

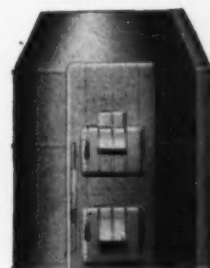
## COAL... GAS... OIL

PEORIA 2, ILLINOIS

MEYER Oil-fired AIR CON-  
DITIONER—gives the user  
of oil a new conception of  
cleanliness, efficiency and  
economy of operation.



MEYER Gas-fired AIR CON-  
DITIONER—built for effi-  
ciency and durability. Easy  
to install, finer performance,  
greater convenience.



The NEW WEIR Series U  
STEEL FURNACE. Famous  
WEIR reputation plus ex-  
clusive and entirely new  
features.

**WEIR-MEYER** MEANS *Modern Heat*

National advertising builds  
consumer recognition of this  
symbol of highest quality.



MILCOR Drop

MILCOR End and Drop

MILCOR End

Hemmed Inner Edge

Gauge No. Stamped Into Gutter

28 GA

Eaves Trough Mitre

Correctly Formed Bead

Either Slip Joint or Lap Joint

Perfectly Rounded Shape

**Available Now!**

MILCOR Corrugated Round Conductor Pipe Elbow

MILCOR Conductor Pipes  
(Plain round and corrugated round only available now)

Titelock Eaves Trough Hanger

**Your big money-makers . . .**

**MILCOR Strate-Edge Eaves Trough and accessories**

Here's welcome news! Milcor Strate-Edge Eaves Trough—and accessories — are back! To help you do good-looking work that gives your shop a name for quality workmanship. To help you spend fewer hours on a job — thus enabling you to handle more jobs and make more money.

Strate-Edge Eaves Trough still gives you all the famous Milcor features that simplify work on the job. The carefully rolled outside bead and hemmed inner edge make Milcor Strate-Edge easy and safe to handle. No sharp edges. The hem and bead also make the gutter strong — add

toughness and rigidity to both inner and outer edges. You can put more sections up at one time. There are no sagging sections after the job is up.

The accurate, rounded shape of Milcor Strate-Edge Eaves Trough is duplicated in all accessories, making them easy to fit and quick to apply.

Milcor and Osborn branches now have these rain-carrying items in stock, for immediate deliveries.

Enjoy the extra margin of profits from jobs that go up quickly and smoothly. Standardize on Milcor Strate-Edge Eaves Trough — and accessories—for all rain-carrying work.

**MILCOR STEEL COMPANY**  
MILWAUKEE 4, WISCONSIN

Baltimore 24, Md. • Chicago 9, Ill. • Kansas City 8, Mo. • Los Angeles 23, Calif. • Rochester 9, N.Y.

... equipped to provide additional service through

THE J.M. & L.A. OSBORN CO.

... a Division of Milcor Steel Company.

CLEVELAND 14, OHIO  
DETROIT 2 • BUFFALO 11 • CINCINNATI 25

G-98

# CHRYSLER AIRTEMP

## Doorway to a New Era



**PART OF A TEN MILLION DOLLAR EXPANSION—  
THE FUTURE HOME OF CHRYSLER AIRTEMP  
"PACKAGED" HEATING, COOLING, REFRIGERATION**

This is the entrance to the new home of Chrysler Airtemp at Dayton, Ohio.

Inside the windowless walls of this ultra-modern plant, temperature and humidity will be fully controlled every day of the year. Here the most modern mass production facilities will be employed making it possible for millions to enjoy the benefits of year 'round air conditioning in homes, offices, stores, shops and industry. A new era for Americans is just around the corner.

Back in 1937, Chrysler Airtemp pioneered "packaged" air conditioners with the famous sealed

radial compressors. Today, a wide range of heating, cooling and commercial refrigeration products are bringing new comfort, protecting health and promoting efficiency throughout the world.

Chrysler Airtemp air conditioning, refrigeration and heating offer dealers an opportunity for 12 months' profitable operation. Dealer agreements will be available for any single line . . . any two lines or all three lines. • Airtemp Division, Chrysler Corporation, Dayton 1, Ohio. In Canada, Thermo-O-Rite Products, Limited, Toronto, Ont.

Buy Victory Bonds—Listen to the music of Andre Kostelanetz, Thursday, CBS, 9:00 p.m., E.S.T.

**HEATING • COOLING • REFRIGERATION**

**CHECK THE FACTS**

**AND YOU'LL FIND...**

# Records Prove OIL-O-MATICS

require only

**1/3 AS MUCH  
SERVICE AS**

the average of

**ALL OTHER MAKES  
COMBINED\***

Oil Burners

Home Insulation

**HAROLD B. PICKERING**  
409 EAST BUFFALO STREET  
ITHACA, N. Y.

September 12, 1945

Williams Oil-O-Matic Division  
Eureka Vacuum Cleaner Company  
Bloomington, Illinois

Gentlemen:

I service about 50% of all the oil burning equipment now in use in Ithaca, N.Y., and vicinity, where I estimate there is a total of more than 400 installations, comprising many different makes.

This equipment gets hard, continuous use, inasmuch as Ithaca is in a section where the winter is long and severe.

My records indicate that Oil-O-Matic equipment requires only one-third as much service as the average of the other makes. Putting this another way, the average burner of another make requires three times as much service as does the Oil-O-Matic.

Very truly yours,

*H. B. Pickering*

H. B. Pickering

HBP:LC

**WILLIAMS  
OIL-O-MATIC  
HEATING**

**WILLIAMS  
OIL-O-MATIC  
HEATING**

**WILLIAMS OIL-O-MATIC DIVISION**  
EUREKA VACUUM CLEANER COMPANY  
BLOOMINGTON, ILLINOIS

Carefree burner operation has always been taken for granted by Oil-O-Matic dealers. However, as so many other dealers passed out of the wartime picture, owners of other makes of oil burners naturally turned to Oil-O-Matic dealers for service. Only then did these dealers fully realize the tremendous competitive advantage of their burner's mechanical superiority. The above letter is typical of reports reaching us from Oil-O-Matic dealers who service several makes of burners.

Basic reason for this outstanding service record is the famous Oil-O-Matic Lo-Pressure principle which eliminates trouble before it begins—plus the use of the quality materials and the precision workmanship for which Oil-O-Matic has been noted for over 25 years.

Oil-O-Matic dealers need not be reminded that trouble-free operation means easier selling because of endorsements from satisfied owners—and consequently greater profits.

**WILLIE O-MATIC** says: "Wartime readjustments have resulted in a few choice territories being opened. Yours may be one of them. Phone, telegraph or air mail—Attention: New Business Department."





*Build up*

**ASSEMBLY  
SPEED...  
STRENGTH...  
SAVINGS...**

## KNOW ALL **7** OF THESE P-K FASTENING DEVICES

The P-K Type "A" Sheet Metal Screw takes top honors in most sheet metal shops because of its 30 year record of saving time and trouble.

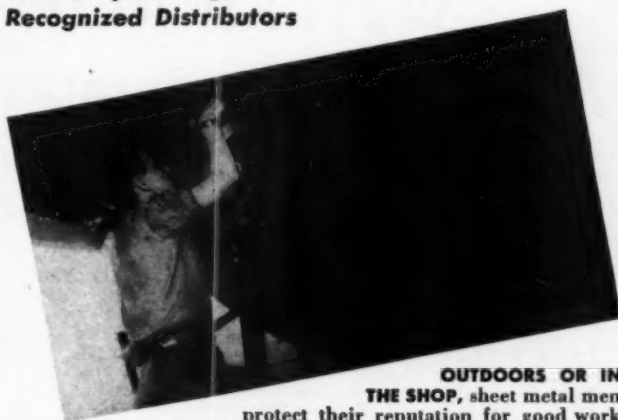
But are you missing out on many additional savings by overlooking the other six fastening devices that make up the famous P-K seven? It will pay you to know them all - and use them in the many assemblies where they permit short cuts to better work. Many new kinds of fabricating jobs come into your shop today - but whatever the material - any kind or thickness of metal, plastic, fiber - there's a P-K Screw for the job.

"WHERE AND HOW TO USE" BOOKLETS - free on request - will give you quick facts on all the P-K Fastening Devices important to sheet metal shops - tell where and how to use them. Write for copies of these new booklets.

FREE SAMPLES, TOO... just tell us what you want to fasten

and we'll send the correct type of screw. Parker-Kalon Corporation, 208 Varick Street, New York 14, N. Y.

**Sold Only Through  
Recognized Distributors**



**OUTDOORS OR IN  
THE SHOP,** sheet metal men  
protect their reputation for good work  
- and save money with P-K Fastening Devices.

**PARKER-KALON** *Quality-  
Controlled* **Sheet Metal Screws**



## WORKING PARTNER of all WHITE-RODGERS Automatic Temperature Controls

This compact, accurately balanced, sturdy switch mechanism is the second basic part of White-Rodgers temperature controls. Because the Hydraulic-Action element is so powerful, more hard-working life can be built into this switch. That is why White-Rodgers controls are so widely endorsed by the heating, air-conditioning and refrigeration fields. Catalog and installation data supplied on request for your applications requiring accurate temperature control.

Here's How  
It Works:



### CONTRACTED

At left is a cross-section of the diaphragm and part of the liquid-filled capillary. The liquid has contracted, the diaphragm moving inward, causing the switch to function.



### EXPANDED

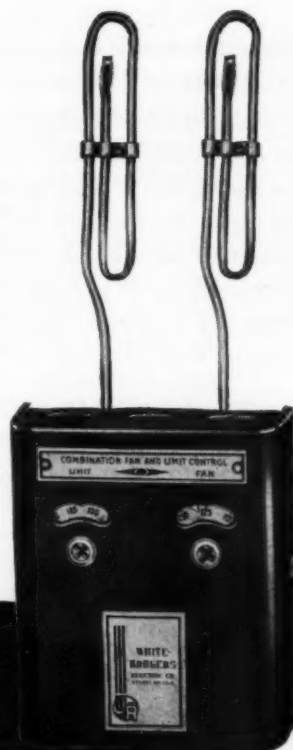
In view at left, the liquid charge of the capillary has expanded with a rise in temperature. This positive force moves the diaphragm outward and causes the switch to function.

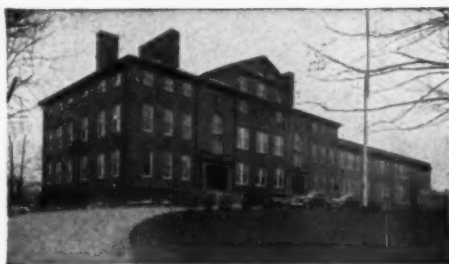


# WHITE-RODGERS ELECTRIC CO.

ST. LOUIS 6, MISSOURI

*Controls for Refrigeration • Heating • Air Conditioning*





# 100 TONS LESS

## AFTER INSTALLING WINKLERS

Gentlemen:  
Last summer we installed four of your Winkler Stokers in our Junior-Senior High School building. We started the stoker earlier in the fall than we have usually started our hand-fired boilers. Much of the coal we have been able to get has been of an inferior quality. Our buildings have been more uniformly heated than ever before. Rooms we formerly found difficult to heat have been satisfactorily heated.

Our maintenance man is a very conservative gentleman. He told me this morning that he was entirely satisfied with the workings of the stokers and that we did save at least seventy-five tons of coal, and probably one hundred tons over what we have usually used through hand-firing. This is approximately a twenty-five per cent saving.

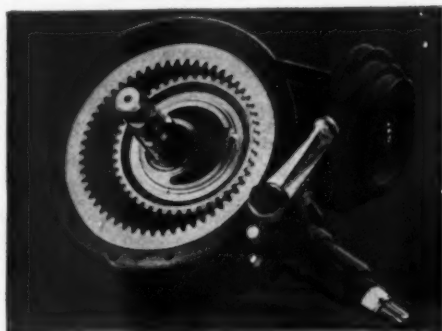
This summer our School Committee, being so well satisfied with these stokers, is planning to install another stoker." (Name on Request)

A complete line of Hopper and Self-feed Models for residences, apartments, commercial and industrial buildings.

### FULL PROTECTION WITHOUT A SHEAR PIN!

Here is the feature which gives Winkler the edge. This fully automatic transmission develops extra power to handle ordinary operating overloads—brings freedom from usual service troubles.

There is no shear pin in a Winkler! Protection against damage which may be caused if the feed screw becomes blocked is provided by the Winkler Safety Release which automatically disconnects the transmission until the blocking object is removed. The Winkler thereupon resumes normal operation.



Winkler No. 15  
Self-feed Model



Winkler No. 10  
Hopper Model

# WINKLER

## fully automatic STOKERS

U. S. MACHINE CORPORATION, Dept. J-6, LEBANON, IND.



There are many modern appliances which improve our standards of living—but often at an increased cost. Winkler Stokers make a genuine contribution, too, but with this difference—they actually pay their owners a cash dividend every year of their long operating life.

The above letter is a typical comment on the manner in which a Winkler Stoker develops to the fullest the economies and other benefits of stoker-firing. It illustrates the fact that a Winkler is a safe investment paying an incredibly large return.

### The right stoker for a booming market

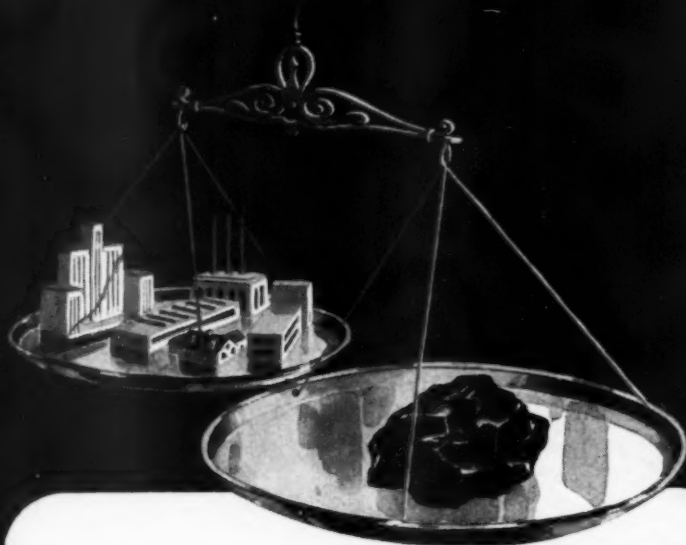
The Golden Age of stoker merchandising is here—offering unusual rewards to aggressive dealers. But, remember this, the greatest rewards will go to those distributors who pick the stoker with the greatest sales potential! The Winkler Stoker offers these advantages:

1. A product famous for its mechanical excellence and its thousands of money-saving installations.
2. The most comprehensive program in the industry for training distributors and their organizations in successful stoker merchandising methods.
3. A strong national advertising schedule.
4. A distributor's Advertising Fund which provides double the usual amount of local *personalized* publicity.

Be critical! Write for information on the Winkler Franchise—match its advantages if you can!

# We'll be talking about YOU!

This PENN advertisement in the October 8th issue of *Time* promotes heating plant reconditioning and emphasizes the importance of your service. It tells about the threatened coal shortage this winter . . . and warns homeowners about fuel waste. It tells homeowners what the *heating service man* can do to help them *save fuel* . . . and help them prepare for the coming winter. This advertisement has already appeared in *Business Week*, acquainting the influential people who read that important magazine with the essential nature of your business. This is only part of PENN'S consistent campaign to promote and support the heating industry.




## What's the Value of a Lump of Coal?

No, we're not thinking of dollars and cents . . . but of coal's importance to our industrial plants, transportation systems, electric power plants . . . its importance in providing health-protecting warmth in our homes, schools and hospitals. *Coal is invaluable to this postwar period!*

Because coal will be called upon to perform so many vital functions in assuring successful reconversion . . . avoidable fuel waste cannot be tolerated! Every lump of coal must be utilized fully to help prevent even greater shortages this coming winter. How? Here's one simple but effective way in which you can do *your part* . . .

Call your service man today . . . let him recondition your heating plant *to save fuel*. Automatically controlled systems should be checked and controls repaired or replaced when necessary. If your heating system is hand fired . . . the addition of PENN Draftender control will help *save fuel* and provide some of the *comfort and convenience* of automatic heat.

The making of such automatic controls is PENN's job, and has been for a long time. PENN controls have compiled an outstanding record for convenience and fuel economy. When you need heating controls . . . be sure they're PENN. *Penn Electric Switch Co., Goshen, Indiana.*

**PENN**   
**AUTOMATIC CONTROLS**  
FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS

***Here is warm air heating comfort  
you've never dared promise before!***



★ Temperature variations as little as 4° between floor and ceiling 24 hours a day! A constant circulation of gentle warmth—there is none of the alternately over-warm and slightly chilly effect common with ordinary “stop and go” systems. Superfex is the Furnace of the Future . . . different in principle, different in design, different in the heating results it delivers.

The three-stage principle automatically adjusts the heat level and with synchronized blower action provides a continuous, positive flow of fresh warm air.

There are many other exclusive features that now make it possible to sell warm air heating comfort you've never dared promise before because every feature has been tested and proved under severe conditions in thousands of private homes!

This new kind of warm air heating comfort is amazing heating experts today. Tomorrow it may well change the furnace buying habits of the nation. Be sure to investigate it.

## *Superfex* FURNACES

PERFECTION STOVE COMPANY

7796-D Platt Avenue • Cleveland 4, Ohio

A complete line of winter air conditioning furnaces — for oil and gas.



BLACK ANNEALED WIRE • BATTEN STRIPS • SHINGLES  
CONDUCTOR PIPE • CUTOFFS • OUTLETS • END CAPS  
POLISHED-BLUED SHEETS • ROOFING, VALLEYS, GUTTERS  
ELBOWS • GALVANIZED SMOOTH WIRE • RIDGE ROLL

FUNNELS •

HEATER

MITRES

FINIALS

FLUE THIMBLE

CONNECT

ELBOW

COLLA

DAMP

WALL

STEEL

ROOFIN

TEE JOINTS

CONNECTIONS •

CURVED ARCHES •

CROSS CORRUGATED SHEETS •

GALVANIZED SHEETS •

FLASHING •

STOVE PIPE ELBOWS •

DRAW BANDS •



**Wheeling**

CORRUGATING COMPANY

REG. U.S. PAT. OFF.

CORNER SHIELDS •

TUBES •

CONDUCTOR PIPE HOOKS

ELBOWS

EETS

GS

TS

PE

RS

PIPE

INGS

FLASHING

HEATER PIPE TIN

LONG TERNE SHEETS

FLUE STOPPERS

WALL PLUGS

FURNACE PIPE

TERNE ROLLS

CASING COLLARS

TERNE PLATE • TIN PLATE

*Most Any Day, Now!*

Wheeling Sheet Metal products will again take their places on the Main Streets of America. For 55 years Wheeling has been producing high grade steel products and has never deviated from this policy. The Wheeling trademark looms larger in the 55th year of business than ever before.

**Wheeling Corrugating Company**

WHEELING, WEST VIRGINIA  
OFFICES AND WAREHOUSES IN PRINCIPAL CITIES



Safe-T-Mesh • Flattened Mesh •  
Walkway Mesh • Skywalk Mesh •  
Gratings • Reinforcing Mesh •  
Cement Gun Mesh • Highway  
Mesh • Bank Vault Mesh • Stucco  
Binder Mesh • Burial Vault  
Mesh • Welded Wire Reinforcing  
Fabric • Expanded Metal  
Fasteners and Accessories

The complete line of Wheeling Sheet Metal products has been augmented by Steelcrete Expanded Metal.

# "MODUFLOW HAS ADDED A ROOM TO OUR HOME"



LONG LEAF YELLOW PINE  
SHORT LEAF YELLOW PINE  
BROOKLYN PINE  
REDWOOD  
PINEAPPLE PINE  
ORANGE WHITE PINE  
RED CEDAR SHEDDING  
RED CEDAR SHEDDING

PHONE: BELMAR 4087

**H. F. HUMES**

7448 MELROSE AVENUE  
UNIVERSITY CITY, MO.  
January 15, 1945.

STANDARD TUBING  
TANK & SHEDS  
LUMBER  
IRONWORK, BRICK  
CONCRETE & CEMENT  
PAINTING  
PLYWOOD  
LATH

Mr. Walter Anderson,  
Minneapolis-Honeywell Regulator Co.,  
4030 Chouteau Ave.,  
Saint Louis, 10, Mo.

Dear Mr. Anderson:

You will agree, I am sure, that the recent spell of very cold and windy weather gave "Moduflow" a severe test of its ability to maintain even temperature in our home under extreme conditions.

I am happy to advise you that it handled the job in a most satisfactory manner, especially did it provide a measure of comfort in our sunken studio living room we had come to believe impossible. That room, under like conditions heretofore, has been utterly uninhabitable even when the temperature was in the forties.

In effect, "Moduflow" has added a room to our home during the heating season. I recommend that it be given careful consideration for the purpose of getting the utmost in comfort from their present heating facilities.

Very truly yours,

*H. F. Humes*

HFH-H

What Moduflow has done for the Humes, it can do for your customers. Hundreds of users in all parts of the country have testified to the amazing performance of Moduflow.

As you know, Moduflow is Honeywell's newest contribution to automatic heating. Instead of conventional intermittent firing, Moduflow delivers an uninterrupted flow of

heat to all rooms, at exactly the correct temperature to satisfy the room thermostat and in the exact quantity to offset heat loss.

Capitalize on the acceptance and national advertising of Moduflow. And remember, Moduflow will help you sell automatic heat. Minneapolis-Honeywell Regulator Co., 2726 Fourth Ave. So., Minneapolis 8, Minnesota.



**THEY'RE NOT AVAILABLE NOW . . . BUT**



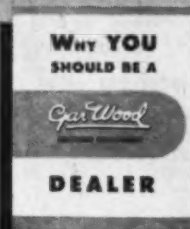
The new Gar Wood Heating Units are destined to reach a new high in popularity. That's no wonder when you consider the thousands of owners who know from **ACTUAL EXPERIENCE** that

Gar Wood stands for high efficiency and unusual economy of operation. Home owners *talk* about that kind of performance. And here's a word to the wise: the new oil-fired or gas-fired Tempered-Aire Units, and the oil-fired Boiler-Burner Units, Conversion Burners and Water Heaters are better than ever before . . . in performance, eye-appeal and **SALES APPEAL**.

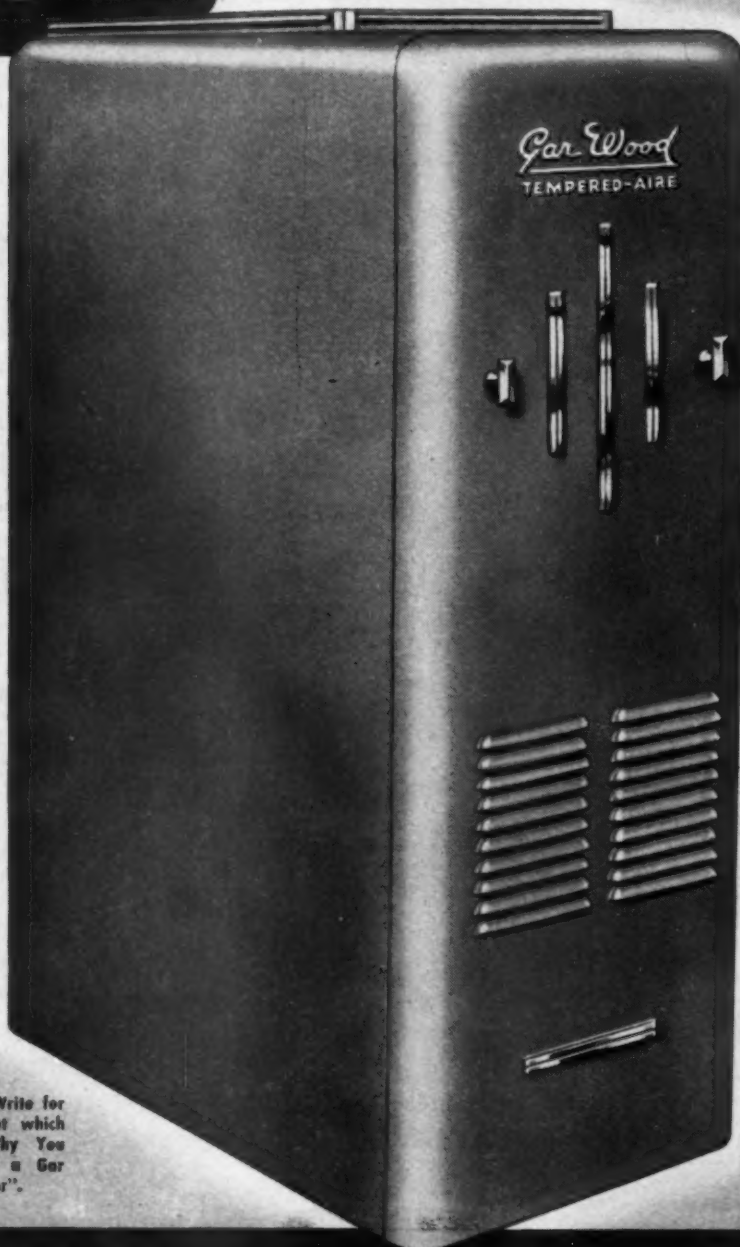
*Gar Wood*  
**HOME HEATING  
UNITS**

**HERE'S WHY  
It's Easy to Sell  
Tempered-Aire**

- ★ Advanced Gar Wood Engineering
- ★ Tried and Proved for more than 10 Years . . . plus recent developments
- ★ Completely Automatic
- ★ The Original Oil-fired Furnace-Burner Unit on the Market
- ★ Beautifully Designed Die-Formed Cabinet
- ★ Now More Efficient than Ever
- ★ Proved Economy of Operation
- ★ More Compact . . . Smaller in Size



DEALERS: Write for this booklet which shows "Why You Should Be a Gar Wood Dealer".



**GAR WOOD INDUSTRIES, INC., HEATING DIVISION**

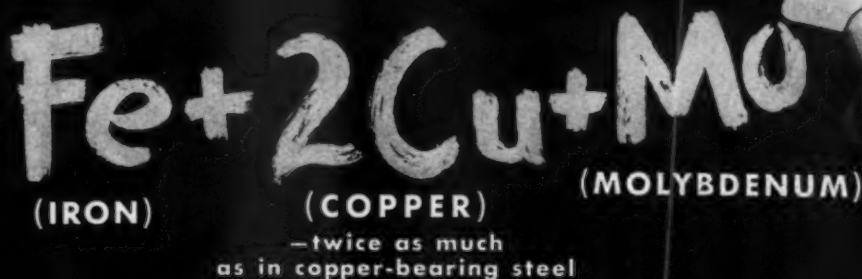
7924 RIOPELLE STREET

DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd., 282 Dupont St., Toronto, Ont.

HOISTS and BODIES . . . WINCHES and CRANES . . . TANKS . . . ROAD MACHINERY . . . MOTOR BOATS

## FORMULA FOR LONGER SHEET METAL LIFE



## Toncan Iron contains Molybdenum

—a critical element in producing the Highest Rust-Resistance  
of All Ferrous Materials in its Price Class

That "Mo" in the formula for Toncan Iron could also stand for MORE —more rust-resistance than any other ferrous material in its price class. And a lot of that proved rust-fighting quality is due to the element Molybdenum.

The molybdenum increases the effectiveness of the rust-resisting copper content of Toncan Iron, which contains twice as much copper as copper-bearing steel. Molyb-

denum also helps refine the grain structure of the metal. And it aids in making Toncan Iron's rust-resistance impervious to all fabricating processes.

In Toncan Iron, Copper and Molybdenum are alloyed in correct proportion with open-hearth iron of high purity. This refined iron is low in chemical impurities and high in uniform grain structure—two factors that improve rust-resistance.

And this basic highly-pure iron is specially processed for ductility to make Toncan Iron one of the easiest of all materials to fabricate.

So, if you need a material to withstand severe rust conditions, specify Toncan Iron which for more than 35 years has proved its longer service and lower fabricating costs.

**REPUBLIC STEEL CORPORATION**  
GENERAL OFFICES • CLEVELAND 1, OHIO  
Export Department: Chrysler Bldg., New York 17, N. Y.

There's a lot more to Toncan Iron that means better service and profit. Ask for Booklet No. 410 "How Toncan Iron Makes Money For Sheet Metal Contractors and Fabricators."



*Republic*

**TONCAN** COPPER **IRON**

MOLYBDENUM

Reg. U. S. Pat. Off.

—for ducts, gutters, conductor pipes, roofing, siding, tanks, ventilators, skylights, hoods, and other sheet metal applications requiring rust-resistance.

**PUT YOUR SHOULDER  
TO THE WHEEL  
MR. DEALER . . .**

**. . . and help start this big  
National Advertising Program  
To BOOST YOUR SALES**



## 3 WAYS YOU BENEFIT

1. An industry-wide program to help you step-up your business.
2. Membership in the Association for balance of 1945.
3. Membership for the entire 1946 Calendar Year.



## DEALER'S Subscription Schedule

A Dealer's subscription is to be based upon the number of Furnaces and/or Winter Air Conditioning Units sold in 1940, whether for replacement, modernization or new building.

Number of Units Sold in 1940	Amount of Subscription
Up to 50 . . . . .	\$ 50.00
51-100 . . . . .	100.00
101 or more . . . . .	150.00

*Note:* Includes Dealer Division Membership for balance of 1945 and 1946 calendar year.

**T**HE fascinating story of warm air heating—its comfort, efficiency and economy—is going to be told on a wide-spread scale that is bound to be felt in your local sales area.

The whole industry has joined the efforts of manufacturers, distributors, jobbers and dealers, to sponsor a national program that is all set and ready to go. This program includes extensive national advertising in magazines, rural publications and newspapers directed to the consumer as well as special supporting promotion designed to secure the cooperation of the architectural, building, heating, contracting and fuel interests.

To make this program a complete success the whole-hearted support of the dealer is needed. The resulting business is directed to Dealer-Members of the Association by a prominent display in each advertisement stating, "Consult with the Business Concern Displaying this Emblem."

You are offered the opportunity locally to gain the benefits of this business-building program by subscribing your share, according to the "Schedule of Subscription" listed at the left. Make your check payable to the National Warm Air Heating and Air Conditioning Association, 145 Public Square, Cleveland, Ohio.

*This space contributed in the interests of the industry by*  
**THE RYBOLT HEATER COMPANY**

*Manufacturers of Warm Air Heating and  
Air Conditioning Equipment*

**615 MILLER STREET • ASHLAND, OHIO**



**THE BETTER THE SHEET**

**THE BETTER THE JOB**

**T**HE MAN who works with U·S·S Steel Sheets is working with the best known, most widely advertised sheets in the steel industry—sheets that are noted for their high quality and ease of fabrication.

He is working with sheets that are specially processed for the various kinds of work he does. He may choose from a wide variety of special purpose sheets including Galvanized, Galvannealed, Long Ternes, Hot and Cold Rolled Sheets, Copper Steel and Stainless Steel. Within this group he can obtain sheets that are highly resistant to acids, corrosion and rust. Sheets that are uniform in surface and flatness. Sheets whose bending, rolling, cutting, stamping, and forming qualities make them unusually easy to handle.

If you work with sheets, it will pay you to ask your nearest jobber for those bearing the familiar U·S·S Trademark. It is your guide to quality . . . and your customers' assurance that you are using the best sheets available, for they know and trust the U·S·S Trademark.

**GET THIS HANDBOOK . . . IT'S FREE**

*The Sheet Metal Worker's Guide* points out helpful shop practices, tells how to estimate costs on sheet metal jobs, how to select the right U·S·S Steel Sheet for each job. Sixty-three pages of practical information. No obligation. A card will bring your copy.



**U·S·S STEELS  
FOR SUCCESSFUL SHEET  
METAL WORKMANSHIP**

**U·S·S GALVANIZED STEEL** for sheet metal structures requiring the added protection of a zinc coating.

**U·S·S COPPER STEEL** to give twice the atmospheric corrosion resistance of regular steel at little additional cost.

**U·S·S DUL-KOTE**—A dull-surfaced galvanized sheet and **U·S·S PAINTBOND**—a Bond-erized, galvanized sheet, both specially prepared for immediate painting and better paint adherence.

**U·S·S HOT-ROLLED AND COLD-ROLLED STEEL** to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

**U·S·S STAINLESS AND HEAT-RESISTING STEELS** to assure high resistance to corrosion and heat, and to reduce weight.

**U·S·S VITRENAMEL** — Sheets designed especially for porcelain enameling.

**U·S·S LOW-ALLOY, HIGH-STRENGTH STEELS** to resist corrosion and increase strength-weight ratio.



**U·S·S STEEL SHEETS**

CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago

COLUMBIA STEEL COMPANY, San Francisco

TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham

United States Steel Supply Company, Chicago, Warehouse Distributors

United States Steel Export Company, New York

UNITED STATES STEEL

Presents

**The  
THEATRE GUILD  
On the Air**

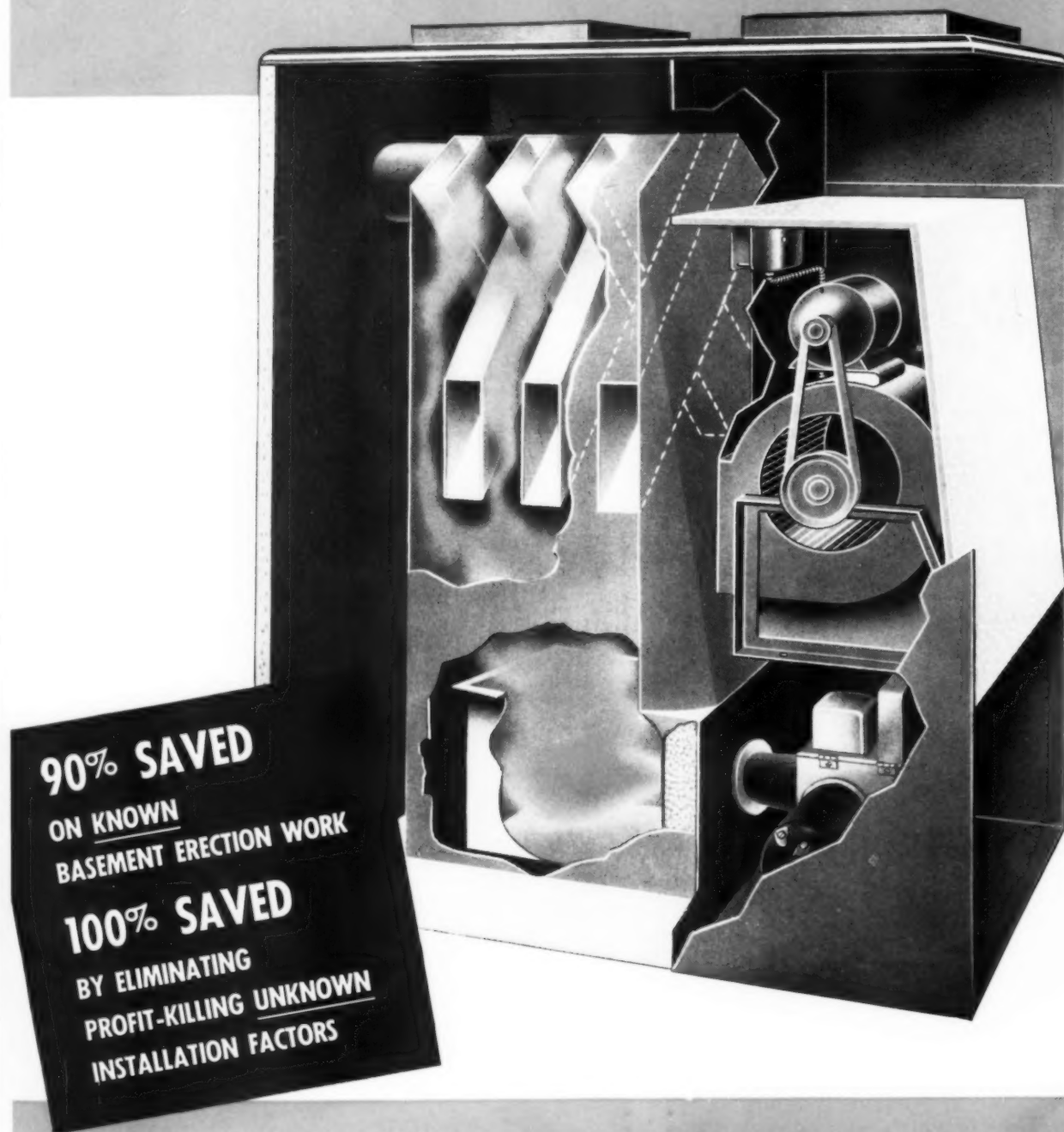
Every SUNDAY EVENING

AMERICAN Network (Blue)



**UNITED STATES STEEL**

# This is the New Post-War.



**90% SAVED**

ON KNOWN  
BASEMENT ERECTION WORK

**100% SAVED**

BY ELIMINATING  
PROFIT-KILLING UNKNOWN  
INSTALLATION FACTORS

Forced Warm Air will be the foremost preference in many parts of the country. The new Packaged Heat Winter Air Conditioner will out-match competition for this market with automatic gas or oil-fired units that come to you "ready to pick up, set down and plug in." Low first cost and ease of handling will bring good profits at low overhead. Sales-wise the Winter Air Conditioner is packed with power: you can offer and demonstrate cleanliness, quiet operation, high efficiency of burner and

heat transfer, speed from a cold start, low stack temperature, humidity control, overall economy. Packaged Heat is in a class with other household appliances . . . lets you concentrate on sales rather than complex assembly engineering and service. Packaged Heat also includes 100% pre-fabricated Boiler-Burner and Split System gas and oil fired units . . . "ready to pick up, set down and plug in." Some franchises are open for progressive dealers and distributors. Get ahead with Packaged Heat.

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fabrics

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# **PENN \* PACKAGED WINTER AIR CONDITIONERS**

Here for the first time you see details of the Packaged Heat Winter Air Conditioner, Penn's efficient, low cost challenger for the less expensive home market. Note the outstanding mechanical features listed below. Check them against your own technical knowledge and you'll see the logic of design. Remember that these units are completely factory pre-fabricated and delivered ready-to-fire.

- One-piece, all welded steel plate construction.
- Packaged Heat patented "wings" house every working part—wiring switches, blower, humidifier, burner, filter, etc.—all mounted and self-contained as integral parts of the unit.
- Newly designed, exclusive fire-travel of intermeshing stacks with every square foot of heating surface under direct fire.
- 30% more effective than secondary tubes and passages.
- Stacks create strong, self-induced draft, each one working on the same principle as a chimney; eliminates noise as there is no single passage flow of warm air to set up resonance.
- Super-heated stacks create vacuum, sucking in air delivered by the blower; high velocity of air flow increases heat transfer and lowers stack temperature.
- Low resistance factor of air travel enhances blower system and delivers heat faster without turbulence or lag.
- 100% direct fired heating surfaces eliminate faulty combustion; diffuse heat evenly in critical surface areas.

\* Delivered "ready to pick up, set down and plug in."



## **THE NEW PACKAGED HEAT OIL BURNER**

This is the new Packaged Heat pressure-type Oil Burner, ready for production after 4½ years of exhaustive research and development. Bulk, weight and complex structure have been "designed out." Built-in are silent operation, peak air-fuel efficiency and trouble-free performance. All working parts are readily accessible. Most important, the burner has been developed as an integral part of the complete Packaged Heat unit . . . matched, balanced and tested with every other working part.



**PENN BOILER AND BURNER  
MANUFACTURING CORP.**

**LANCASTER, PA.**

**AVAILABLE NOW  
WITHOUT PRIORITY!**

# SKILBLOWERS

**Safest, most  
convenient method  
for cleaning  
machinery!**

SKILBLOWERS deliver DRY AIR at high velocity, under comparatively low pressure . . . the method acknowledged as safest for cleaning motors, generators and other delicate equipment. With suction attachments (also available) SKILBLOWERS are doubly useful as vacuum cleaners or paint and insecticide sprayers.

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and many others

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**MADE BY SKILSAW, INC.**



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**S**EE the bottom of these Multi-Thermex heat exchanger tubes? That's where trouble may occur when you have combustion chambers.

To lick that problem, Janitrol did two things. First, they eliminated the old-fashioned, bulky combustion chamber which built up terrific temperatures right where the exchanger tubes joined in. Then, they placed compact

*Amplifire Burners* right up under the tubes, so the heat would go *into* the tubes instead of collecting beneath them.

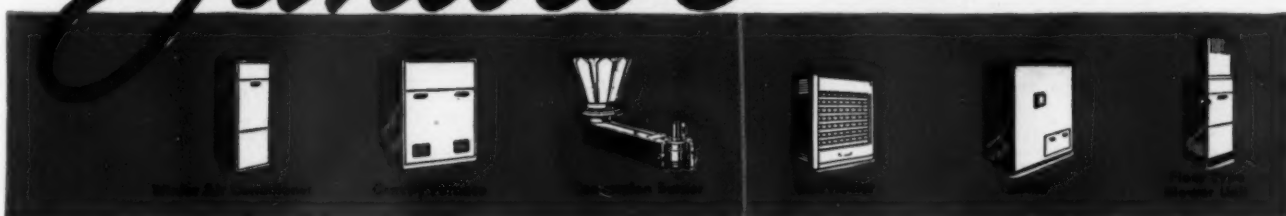
Result — bottoms of Multi-Thermex tubes keep cool. This is one of the assurances that Janitrol Gas-Fired furnaces give long, trouble-free service.

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- 2** You'll have behind you a company which has built its oil heating business by helping dealers build theirs.
- 3** You'll have a real consumer acceptance . . . a trade-mark that dates from the beginning of the oil heating industry . . . backed by a manufacturer whose products have given satisfaction to home owners for more than half a century.
- 4** You'll sell equipment that is soundly designed and ruggedly built . . . to reduce service problems to a minimum and build sales through customer satisfaction. Many Fluid Heat Burners are still on the job after 17 to 20 years of use . . . and one of the largest development laboratories in the industry

keeps Fluid Heat out in front with new sales-building features.

Fluid Heat is ready to help you cash in now on the huge market for oil heat. Check the completeness of the Fluid Heat line below. Then get complete facts about a Fluid Heat Franchise. No cost. No obligation. Write to: Fluid Heat Division, Anchor Post Fence Co., 6720 Eastern Ave., Baltimore 24, Md.

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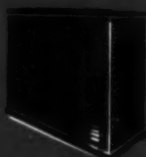
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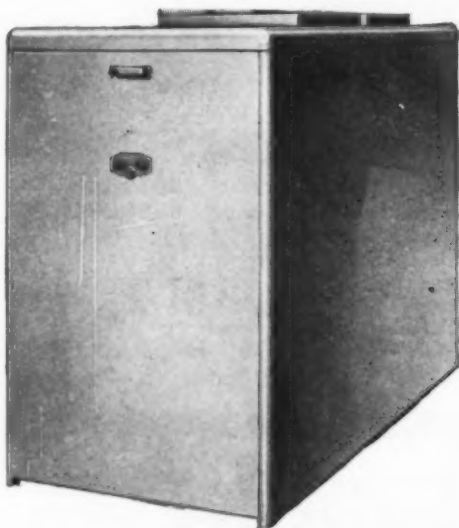


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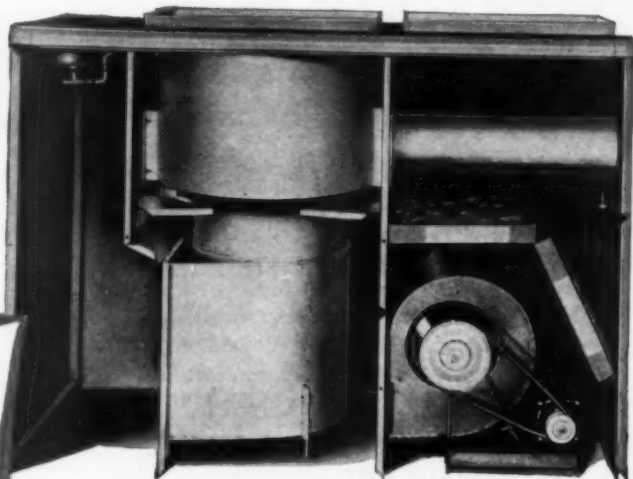
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Available soon for small and medium size homes in six sizes, up to 200,000 B.t.u. per hr. heat output at bonnet. Also in larger sizes, data on request.



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The Fitzgibbons Directaire will shortly be in production in six sizes of 65,000, 80,000, 100,000, 125,000, 150,000 and 200,000 Btu.

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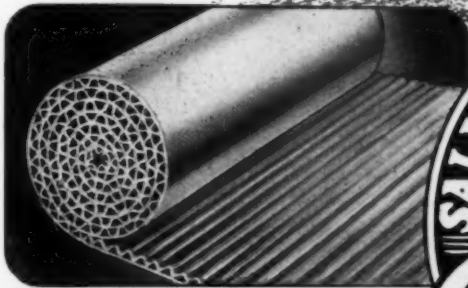
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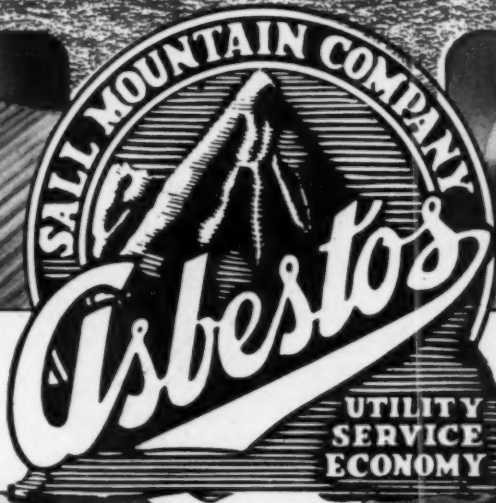
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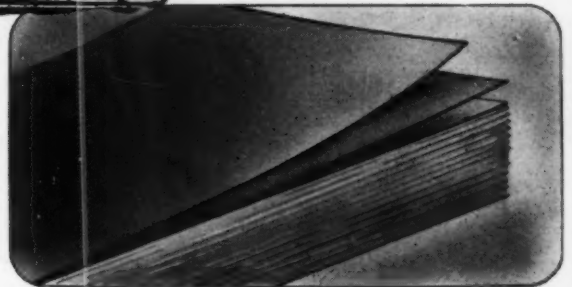
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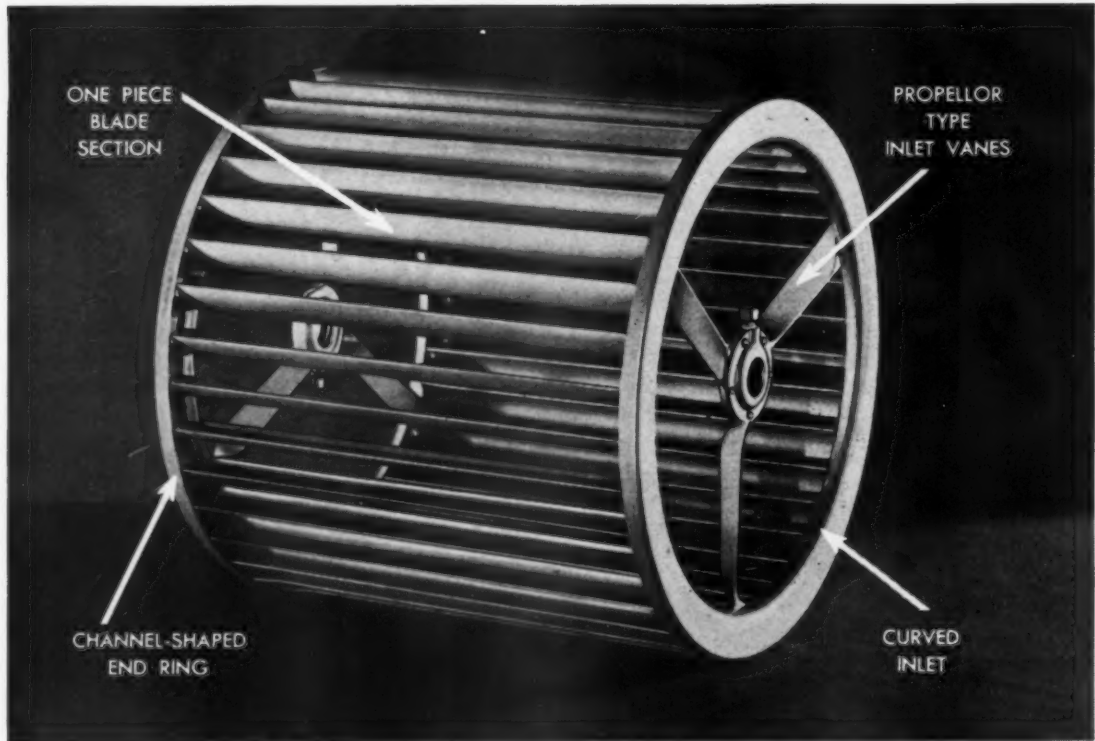
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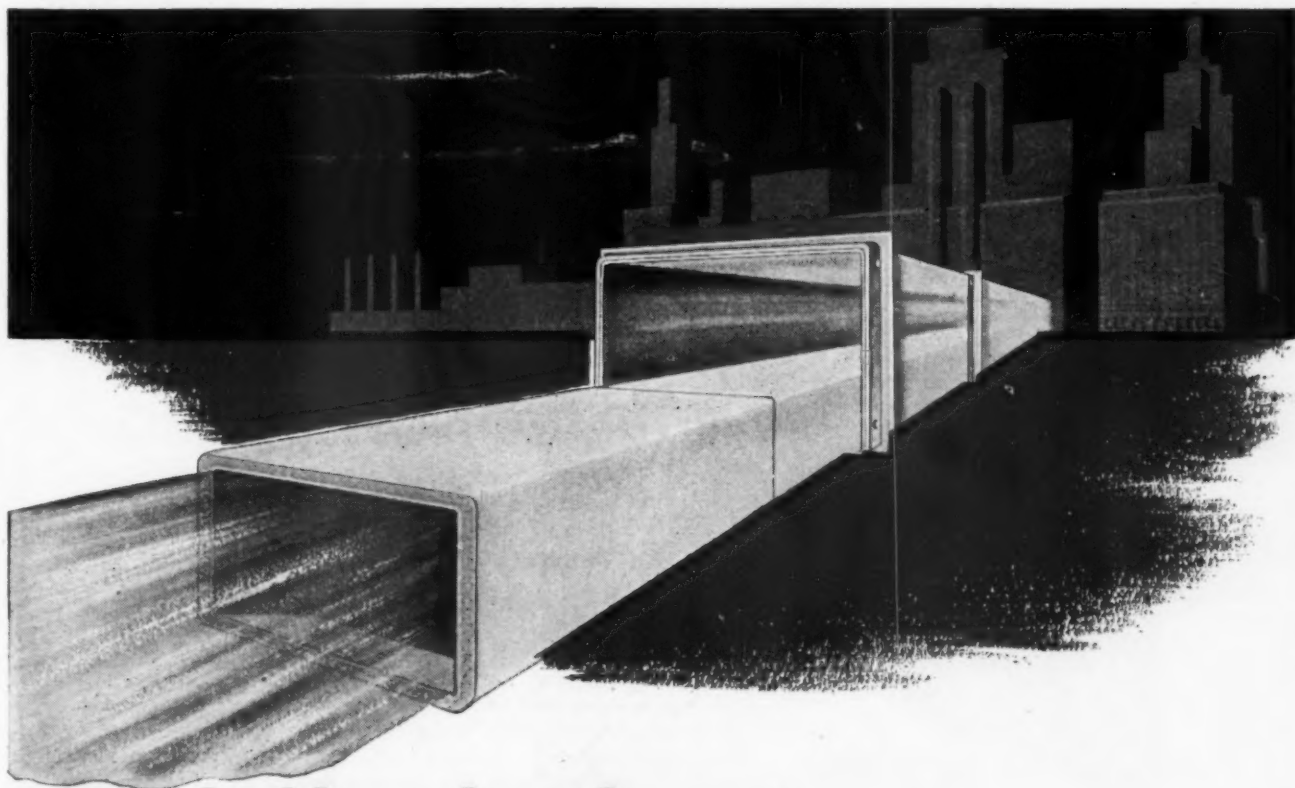
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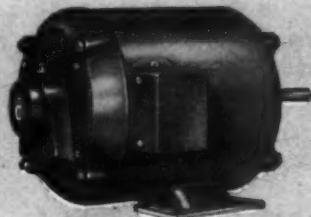
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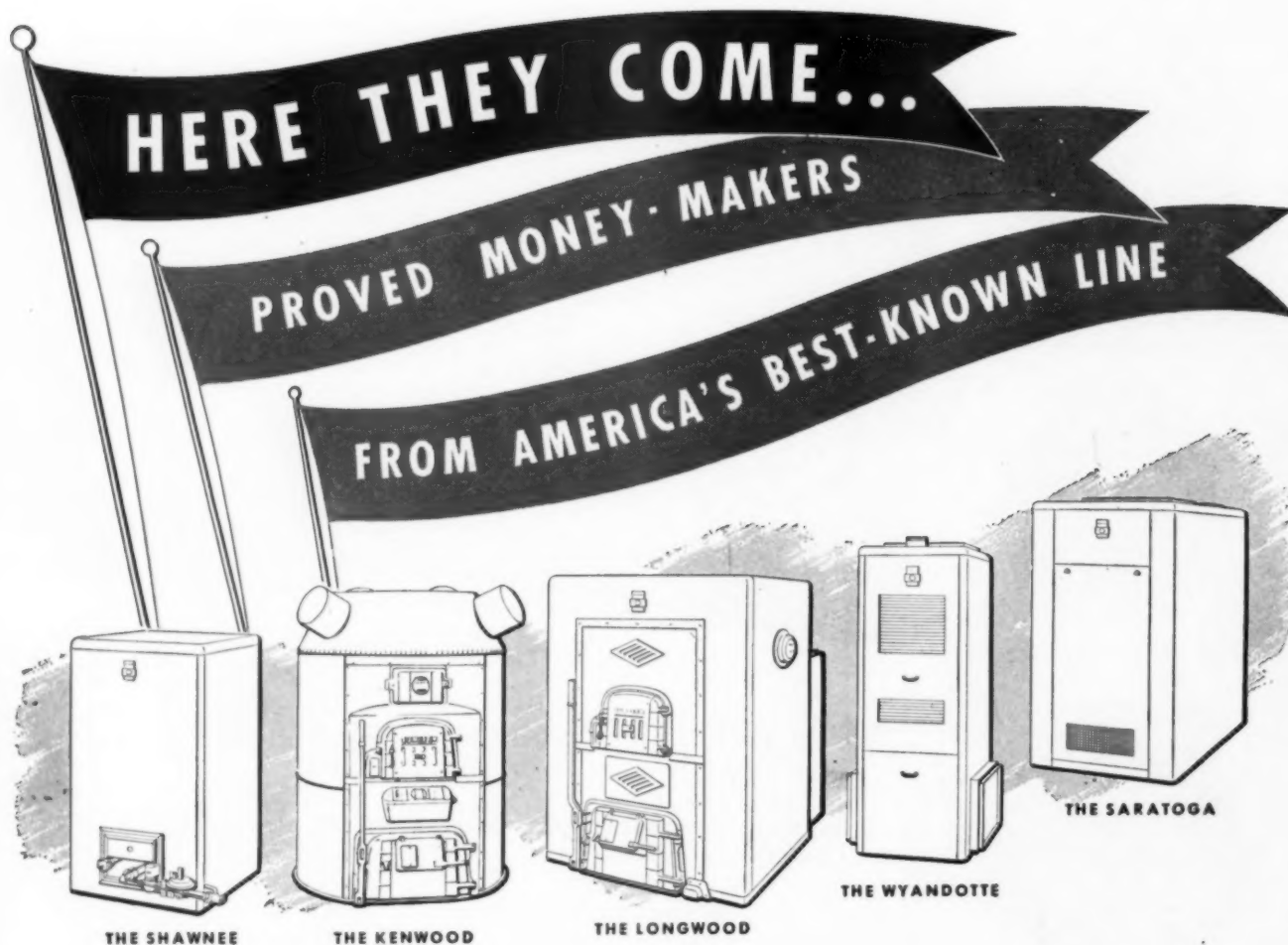
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**P**IONEER CONTROLS for automatic regulation of hand-fired heating plants start with three basic, low cost units: (1) Room thermostat, (2) Damper motor, (3) Transformer and all required wire and fittings in a single package . . . But for the maximum of convenience, comfort and econ-

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 Aircraft and Electrical Controls Division  
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# Dealers- It's a good idea to know just where you're going!

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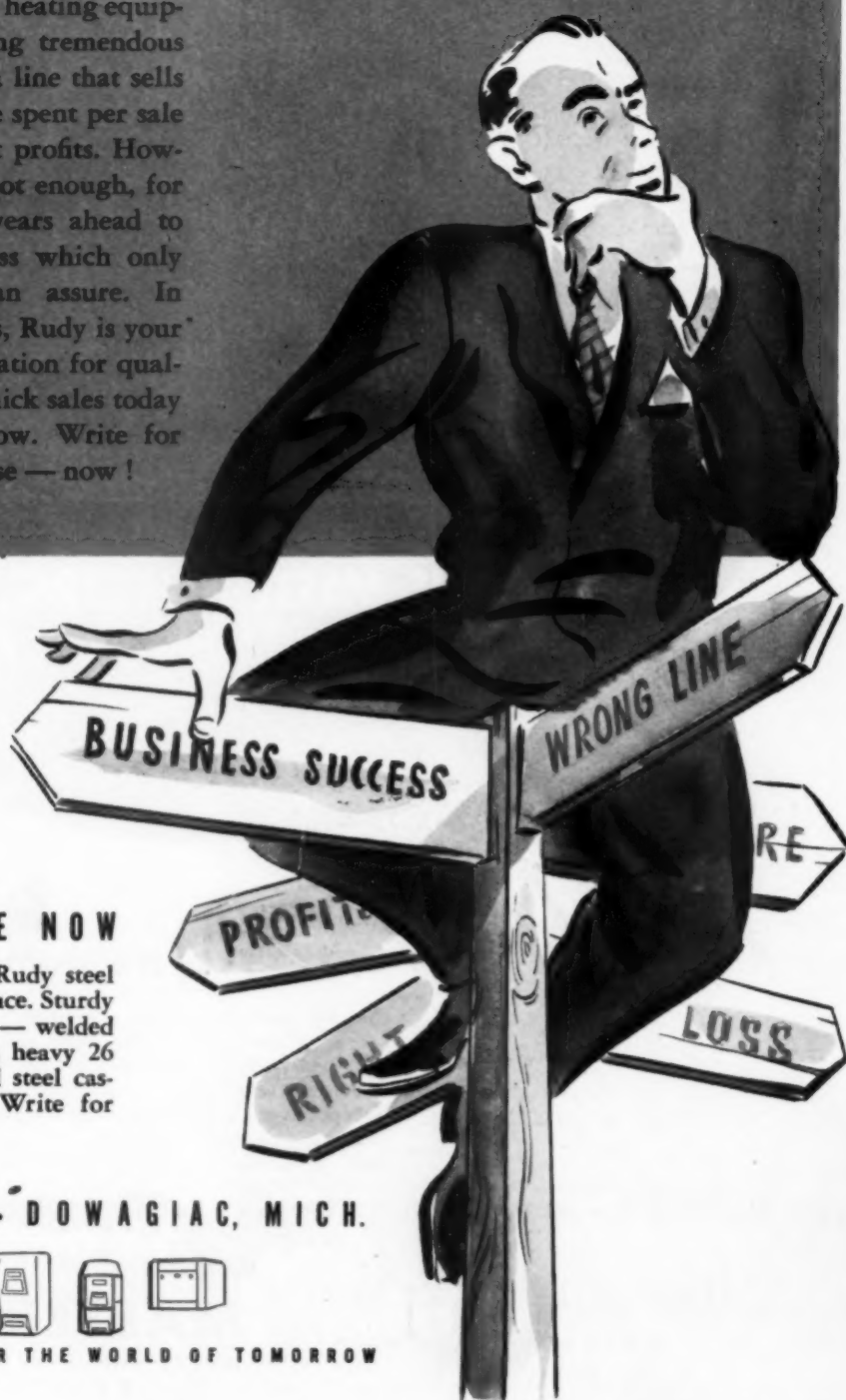
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Sure, there's going to be a fight for the heating business. The heating and air conditioning market is a vast, rich field for sales, and powerful interests are going to make strong campaigns in this market.

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We've been working with Independent Furnace Dealers for a long time. We have a lot of respect for their experience, ability, and reliability. The Independent Dealer deserves the furnace business, and he's going to get it because he alone is fully qualified to make safe, efficient, dependable heating and air conditioning installations.

We want PREMIER equipment installed right, by capable Independent Furnace Dealers. We shall continue to limit the sale of PREMIER equipment to the Independent field, and to do everything we can to keep

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Every PREMIER Dealer will be protected by our Exclusive Franchise. PREMIER Dealers will receive expert Factory Planning Service, plus the assistance of factory trained field engineers, and a wealth of advertising helps. Most important — PREMIER Dealers will have the most complete line in the field, including everything needed to make good heating, air conditioning, and cooling installations.

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Find out if the PREMIER Exclusive Franchise is available in your locality. Learn for yourself what immense opportunities this Franchise offers. Write us today.



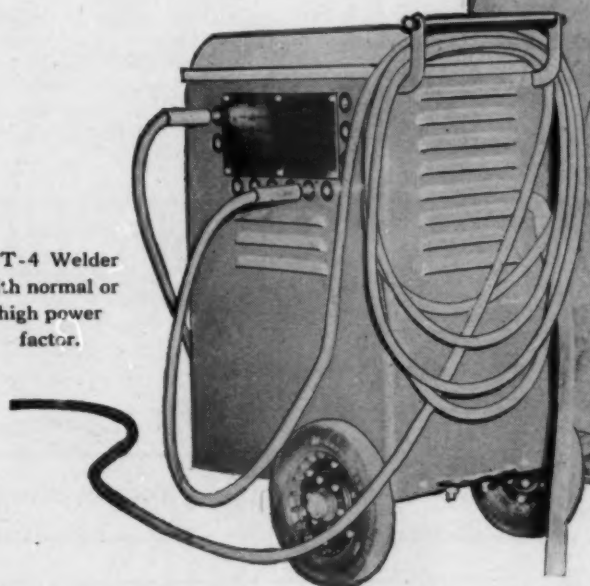
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*Manufacturers of Warm Air Heating and Air Conditioning Equipment*

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WT-4 Welder  
with normal or  
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This sturdy little welder will stay on the job year after year handling heavy production or light repair work...cutting down costs and speeding up service for more profits. Twenty-seven current adjustments from 20-250 amperes permit using a wide variety of electrodes...make it the ideal a-c welder for all around shop work.

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J-70443

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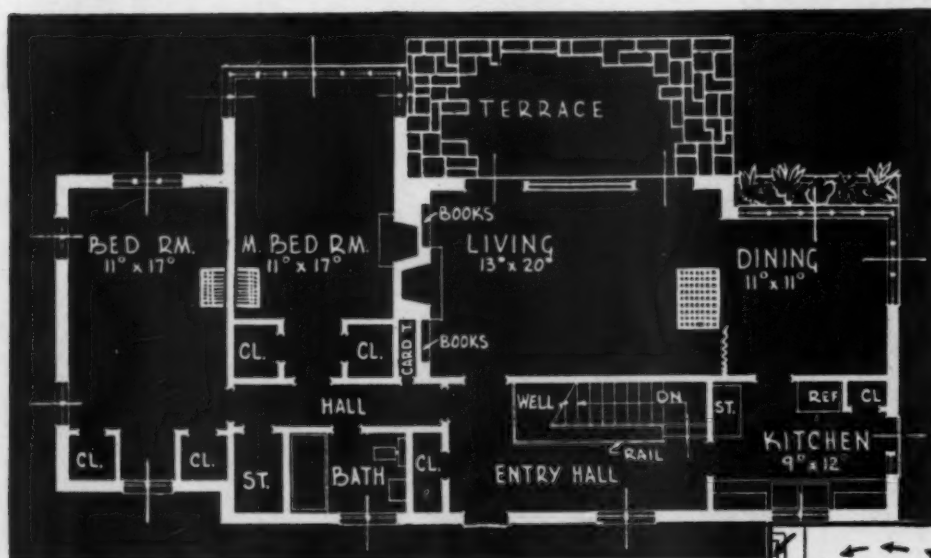


### A NEW HIGH-FREQUENCY STABILIZED A-C WELDER FOR LIGHT GAUGE WORK

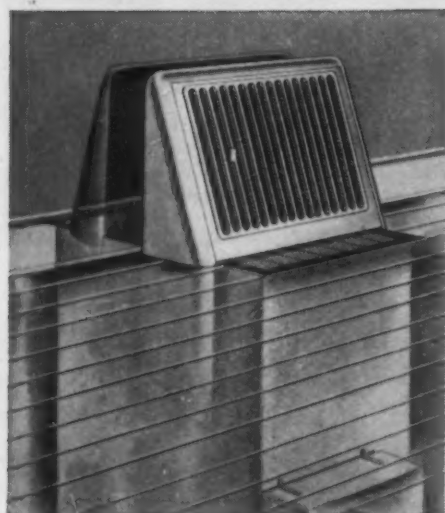
The Westinghouse Type WC-AC is a high-frequency stabilized welder designed especially for welding light gauge metal, thin-wall tubular aircraft fuselage members and difficult-to-weld alloys. Operator can strike arc easily over entire range of welding on light work. The high-frequency stabilized arc keeps current constant . . . prevents burn-through. Ten to 200 amperes. Stepless current adjustment.



# How New Coleman Floor Furnace May Give You A WIDER OPPORTUNITY TO SELL MORE HEAT JOBS

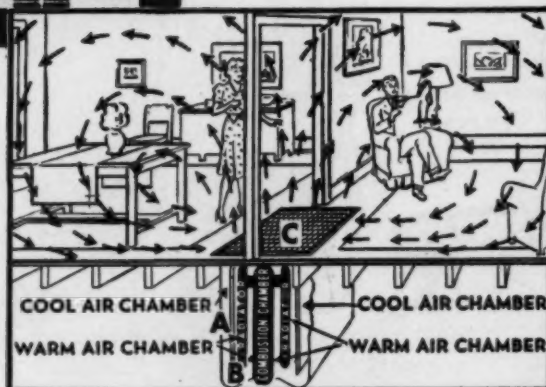


There will be many houses like this attractive design that you'll want to bid on. Advanced ideas in livability lead to advanced ideas in heating, and the Coleman Floor Furnace is one of the ideas that builders, architects and customers are receiving enthusiastically. Heating contractors are enthusiastic too, because they can sell the advantages of flexible heating and extraordinary warm-floor comfort. (This plan from June, 1945 Practical Miracle Design of Practical Builder—created by K. Whitney Dalzell.)



## ◀ WHAT IT IS— WHAT IT DOES ▶

This "cut-away house" shows how a Coleman Floor Furnace is installed—it is an independent automatic heating unit, set in the floor, (not above it and not in the basement—no basement is needed). Floor-level air drawn down through cool-air chamber (A); thoroughly heated in warm-air chamber (B); sent out through 78% open register (C) at top.



**"WARM-FLOOR" COMFORT.** Coleman features, including exclusive streamlined bottom, 78% open register, large air chambers, speed warm-air flow and result in unusual warmth at floor level—a vital factor in the comfort of homes!

**HOW A DUAL-WALL MODEL IS INSTALLED.** Coleman Floor Furnaces, in gas and oil models, are available with dual-wall head to fit under a wall and thus supply heat to either or both of two rooms or two sections of a home. "Phantom-floor" illustration, above, shows simplicity of Coleman dual-wall installation. Illustration indicates gas model. Flat-register models also available for gas, oil or LP gas.

## MEETS DEALERS' NEED FOR SERVICE-FREE, EASY-TO-INSTALL "PACKAGED" HEATING

The added comfort of Coleman's advanced engineering is the sort of advantage that makes happy customers talk enthusiastically about their heating equipment—and recommend their heating contractors to their friends. Coleman Floor Furnaces have every advantage you want. They come in one complete package, with no extras, easy to install. Sizes range from 25,000 to 70,000 BTU input per hour (or their equivalents). Advanced, simplified designs make for minimum service. Gas and LP gas models have AGA approval. Oil models listed by Underwriters' Laboratories. Find out more about Coleman Floor Furnaces and their advantages for you and your customers. Write, now, to The Coleman Company, Inc., Dept. AA-552, Wichita 1, Kansas.

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**HEATING**

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Hussey Products meet your most exacting requirements and service standards.

## Hussey Copper Service to Industry..

Thoroughly experienced engineering and research facilities

Greatly expanded production capacity  
Improved processes and equipment

Strategically located warehouse stocks  
Dependable headquarters for Copper and Copper alloy needs—when peace-time production is permitted

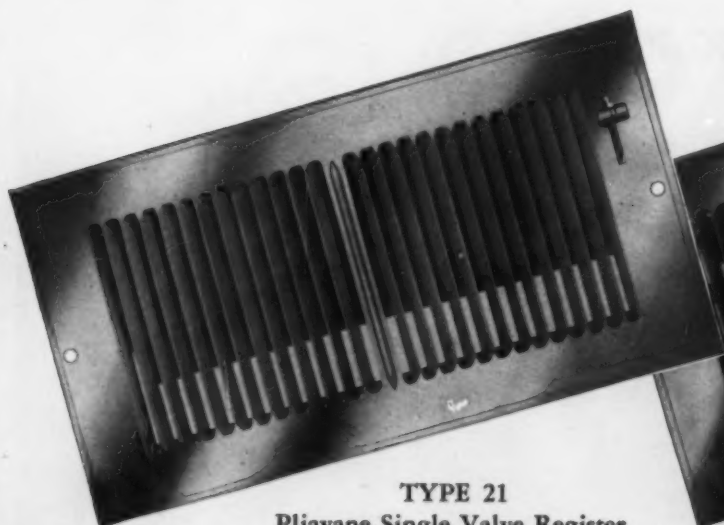
**C. G. HUSSEY & CO.**

(Division of Copper Range Co.)

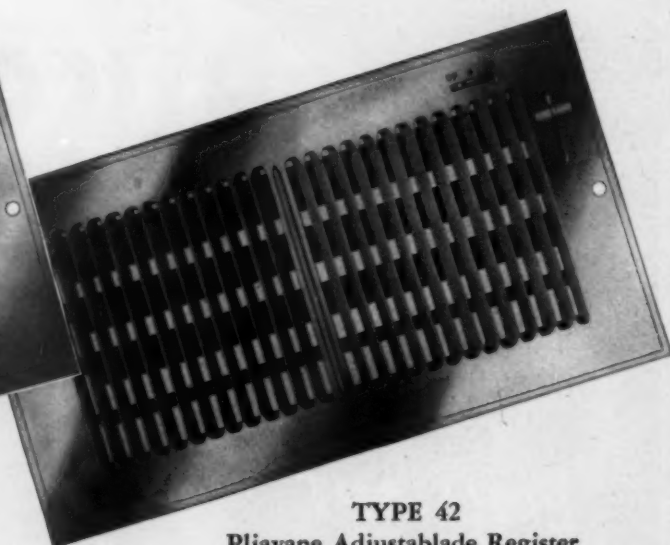
ROLLING MILLS AND GENERAL OFFICES: PITTSBURGH, PA.

Warehouses in Principal Cities

Let Hussey engineers  
work with you now.



TYPE 21  
Pliavane Single Valve Register



TYPE 42  
Pliavane Adjustablade Register

## SHAKE HANDS WITH A COUPLE OF *Old Friends!*

**H**ERE'S the economical bar type register that's ideally suited to the thousands upon thousands of new homes that will go up the country over in the months to come. You know it of old — the Pliavane design which allows for adjustable deflection of the airflow either upward or downward. It's the kind of

an outlet that makes a satisfied customer because of its built-in efficiency and its pleasing appearance. In looks, it's suitable for the mansion on the hill — in cost it's just the ticket for the inexpensive cottage — in efficiency it's ideal for every type of installation.



**TUTTLE & BAILEY**  
INCORPORATED

NEW BRITAIN

CONNECTICUT

# Heil keeps a promise!

**HERE'S THE  
FIRST SHOWING**  
of their  
*Sensational New*  
**OIL HEATING LINE**



4 Models Conversion Oil Burners  
4 Models Furnace-Burner Units  
4 Models Boiler-Burner Units  
2 Models Oil-Fired Hot Water Heaters

...with styling and design features  
suggested by **You**

Here it is at last... the new Heil oil heating line we have been telling you about, but couldn't show you until the war was over. Yes, it's just as we promised. New from heat exchangers to casings, every model is packed with features you dealers told us you wanted to put you out in front of the postwar competition.

You wanted new, thrilling and distinctive styling that would sell your prospects on sight. Here it is... done by one of the country's leading industrial designers. You wanted improved accessibility of all parts to reduce service time. Here it is... with every detail engineered to make your work easier and more profitable. You wanted a complete line with identical construction features in

every model. Here it is... standardized throughout the line for simplified selling. You wanted quieter, smoother and more efficient operation. Here it is... every part of every model incorporating features you suggested for utmost customer satisfaction.

**GET THE FACTS OF A HEIL  
FRANCHISE BEFORE YOU DECIDE**

Your profits are at stake... so be sure you look at Heil before you choose the equipment you will sell. Get your copy of the new preview booklet that shows all the models and tells the whole story of what a Heil franchise means in sales, profits and real merchandising assistance. Many desirable territories are open for aggressive dealers and distributors.



**FREE**

Send today for  
your copy of  
this preview  
booklet of the  
New Heil Line

**THE HEIL CO.**

GENERAL OFFICES • MILWAUKEE 1, WISCONSIN

The Heil Company, Dept. A-11  
Milwaukee 1, Wisconsin  
Send me your book showing full color reproductions of new Heil models and details about the Heil franchise.

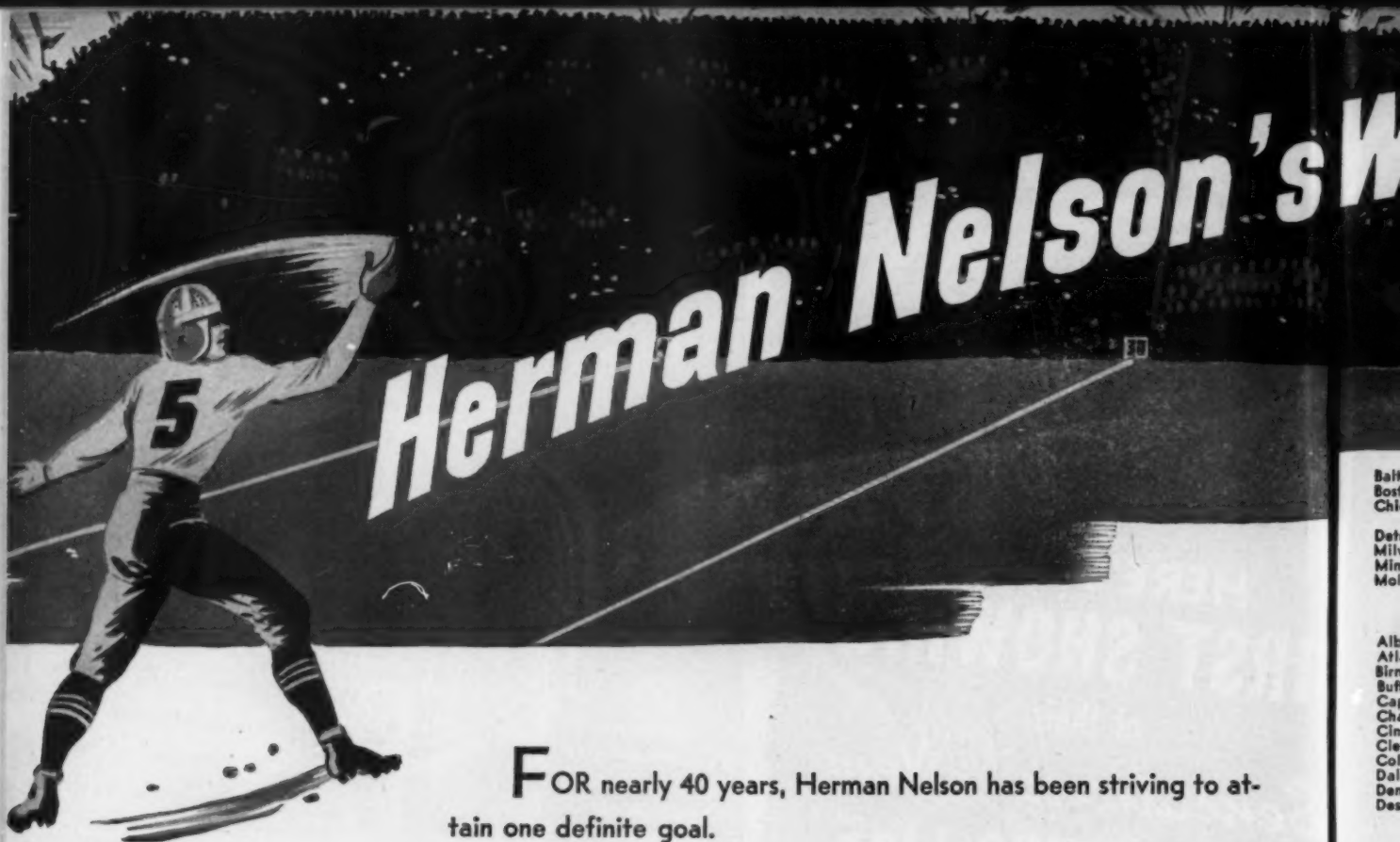
Name.....

Company.....

Address.....

City.....Zone.....State.....

*Manufacturers of Quality Automatic Heating Equipment Since 1924*



# Herman Nelson's Way

**F**OR nearly 40 years, Herman Nelson has been striving to attain one definite goal.

That goal has been not only to design and construct the finest heating and ventilating products available — but also to select and train qualified personnel on a nationwide basis to assist in the most satisfactory solution of heating and ventilating problems.

This "winning combination" of superior products plus trained personnel is an actuality today.

Herman Nelson offers you a line of unit heaters, unit ventilators, propeller fans, centrifugal fans and unit blowers — all designed and constructed for maximum operating efficiency and economy — and second to none in the industry. All have proved their superior performance in actual installations.

Herman Nelson also offers you the assistance of a nationwide organization of Product Application Engineers and Distributors—an organization ready to provide practical as well as technical information in the selection and application of the exact type and size of equipment best suited for each heating and ventilating job.



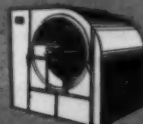
Herman Nelson  
Direct Drive  
Propeller Fans

Herman Nelson  
Belt Drive  
Propeller Fans



Herman Nelson Horizontal  
Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type H  
Centrifugal Fans



Herman Nelson Vertical  
Shaft Propeller-Fan Type Unit Heaters

Herman Nelson  
Type HB  
Centrifugal Fans



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Bost  
Chi

Det  
Mil  
Min  
Mo

Alb  
Atl  
Birm  
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# Winning Combination



## Herman Nelson Branch Offices

Baltimore—G. M. Heslop, Product Application Engineer.  
 Boston—J. E. Carey, Mgr., J. F. Flannery, Product Application Engineer.  
 Chicago—C. A. Pickett, Mgr., J. C. Donaldson, Herman Stal, Product Application Engineers.  
 Detroit—M. E. Van Vliet, Mgr., E. C. Seyphol, Product Application Engineer.  
 Milwaukee—Carl Amundson, Product Application Engineer.  
 Minneapolis—Homer Melvin Bird, Product Application Engineer.  
 Moline—Anthony Spoodis, Product Application Engineer.

New York—Robert F. Ruggles, Mgr., E. V. Loughran, Product Application Engineer.  
 Philadelphia—P. A. Cavanagh, Mgr.  
 St. Louis—Henry C. Sharp, Mgr., E. Paul Harder, Product Application Engineer.  
 Syracuse—Lawrence C. Ward, Product Application Engineer.  
 Washington—J. M. Osborne, Product Application Engineer.

## Herman Nelson Product Application Engineers

Albuquerque, N. M.—Boyd Engineering Co., Ltd.  
 Atlanta, Ga.—Felix J. Commagere  
 Birmingham, Ala.—Hugh C. Boisclair  
 Buffalo, N. Y.—Edward H. Cox  
 Cape Elizabeth, Me.—The Partridge Co.  
 Charlotte, N. C.—Charles M. Seizer & Co.  
 Cincinnati, O.—Kenneth B. Little Co.  
 Cleveland, O.—H. W. Kaiser Company  
 Columbus, O.—Russell H. Smith Equipment Co.  
 Dallas, Tex.—W. E. Lewis & Co.  
 Denver, Colo.—Fox & Company  
 Des Moines, Iowa—Products, Inc.

Duluth, Minn.—Williams-Swanson Co.  
 El Paso, Tex.—Boyd Engineering Co., Ltd.  
 Grand Rapids, Mich.—O. D. Marshall  
 Houston, Tex.—D. R. Rippey  
 Indianapolis, Ind.—George Heidenreich  
 Jackson, Miss.—H. M. Ludlow  
 Kansas City, Mo.—H. H. Wright Company  
 Louisville, Ky.—John Zimmermann  
 Los Angeles, Calif.—F. J. Hearty & Co.  
 Memphis, Tenn.—Southern Sales Co.  
 Miami, Fla.—R. P. Kelley  
 Minneapolis, Minn.—P. R. Reese

Nashville, Tenn.—Southern Sales Co.  
 New Orleans, La.—L. Villers Cressy Co.  
 Oklahoma City, Okla.—O. T. Carroll  
 Omaha, Neb.—Verne Simmonds  
 Pittsburgh, Pa.—Allegheny Engineering Co.  
 Richmond, Va.—W. Wallace Neale  
 Saginaw, Mich.—W. A. Witheridge Co.  
 Salt Lake City, Utah—Rushby C. Midgley  
 San Antonio, Tex.—Harry J. Dalton  
 San Francisco, Calif.—E. C. Cooley Co.  
 Seattle, Wash.—E. H. Langdon Co.  
 Spokane, Wash.—R. L. Nelson

## Herman Nelson Distributors

Babbitt Steam Specialty Co.  
 New Bedford, Mass.  
 Bailey-Farrell Co.  
 Pittsburgh, Pa.  
 Baker Specialty & Supply Co., Inc.  
 Logansport, Ind.  
 E. Best Pkg. & Htg. Supply Co.  
 Quincy, Ill.  
 W. L. Blake & Co.  
 Portland, Me.  
 Bond Supply Co.  
 Kalamazoo and Battle Creek, Mich.  
 J. C. Bowles Co.  
 Seattle, Wash.  
 J. R. Bradley Co.  
 Reno, Nevada  
 Braid Electric Co.  
 Nashville, Tenn.  
 Brammell Supply Co.  
 Benton Harbor, Mich.  
 Brock-McVey Co., Inc.  
 Lexington, Ky.  
 Bruce-Rogers Co.  
 Fort Smith, Ark.  
 Calcasieu Lumber Co.  
 Austin, Tex.  
 Canney-Plue, Inc.  
 Rutland, Vt.  
 Careva Company  
 York, Pa.  
 Carman-Thompson Co.  
 Lewiston, Me.  
 W. A. Case & Son Mfg. Co.  
 Erie, Pa., and Jamestown, N. Y.  
 Cedar Rapids Pump & Supply Co.  
 Cedar Rapids, Ia.  
 Central Metal & Supply Co.  
 Baltimore, Md.  
 Consolidated Supply Co., Inc.  
 Portland, Ore.  
 Cooper Supply Company  
 Tulsa, Okla.  
 Harry Cooper Supply Co.  
 Springfield, Mo.  
 Cordes Supply Co.  
 Milwaukee, Wis.

Crane Co.  
 San Bernardino, Calif.  
 Dailman Supply Co.  
 Sacramento and San Francisco, Calif.  
 Desco Corporation  
 Wilmington, Del. and Chester, Pa.  
 R. B. Dunning & Co.  
 Bangor, Me.  
 Electric Supply Co.  
 Atlanta, Ga.  
 Evansville Supply Co.  
 Evansville, Ind.  
 Ewing Supply Co.  
 Burlington, Ia.  
 Fox Electric Supply Co.  
 Elgin, Ill.  
 Globe Machinery and Supply Co.  
 Des Moines and Cedar Rapids, Ia.  
 Griffith Electric Supply Co.  
 Trenton, N. J.  
 Hajoca Corporation  
 Asheville and Charlotte, N. C.,  
 Richmond, Norfolk, Roanoke,  
 Danville, and Staunton, Va.  
 Hall & Knight Hardware Co.  
 Lewiston, Me.  
 Hansen Supply Co.  
 New London, Conn.  
 The Hardware & Supply Co.  
 Massillon, O.  
 Heating Trades Supplies, Inc.  
 Toledo, O.  
 Higgins Industries, Inc.  
 New Orleans, La.  
 Hoe Supply Co.  
 Christopher, Ill. & Paducah, Ky.  
 Holyoke Supply Co., Inc.  
 Holyoke, Mass.  
 The Hughes Supply Co.  
 Mansfield, O.  
 Industries Supply Co.  
 San Diego, Calif.  
 Inland Supply Co.  
 Champaign, Danville, Elgin and  
 Joliet, Ill.

Inland-Peoria Supply Co.  
 Peoria, Ill.  
 International Engr. & Supply Co.  
 Providence, R. I.  
 E. Keeler Company  
 Williamsport, Pa.  
 Kester Machinery Co.  
 Winston-Salem, High Point and  
 Burlington, N. C.  
 The W. H. Kiefaber Co.  
 Dayton and Hamilton, O.  
 LaCrosse Plumbing Supply Co.  
 LaCrosse, Wis.  
 Latrobe Plumbing Supply Co.  
 Latrobe, Pa.  
 Lehigh Valley Supply Co.  
 Allentown, Lansdale,  
 East Stroudsburg and Easton, Pa.  
 LeValley, McLeod, Kinkaid Co., Inc.  
 Elmira, Olean, Schenectady, N. Y.  
 The Link Company  
 Jackson, Mich.  
 Luzerne & Lackawanna Supply Co.  
 Wilkes-Barre, Pa.  
 Manufacturers Selling Co.  
 Trenton, N. J.  
 Marsden & Wasserman, Inc.  
 Hartford, Conn.  
 Michigan Supply Co.  
 Lansing, Mich.  
 Chas. Millar & Son Co.  
 Utica and Binghamton, N. Y.,  
 Springfield, Mass., & St. Johnsbury, Vt.  
 Morrison Supply Co.  
 Fort Worth, Amarillo, Lubbock,  
 Wichita Falls and Sweetwater, Tex.  
 Mott Bros. Company  
 Rockford, Ill.  
 Murphy Supply Co.  
 Green Bay, Wis.  
 The Ohio State Supply Co.  
 Youngstown, O.  
 Palmer Plumbing Supply Co.  
 Laconia and Rochester, N. H.  
 Palmer Supply Co.  
 Portland, Me.

The Penn. State Supply Co.  
 Sharon, Pa.  
 Reading Foundry & Supply Co.  
 Reading, Pottsville, and Lebanon, Pa.  
 Robbins-Gamwell Corporation  
 Pittsfield, Mass.  
 The Roedel Company  
 Zanesville, O.  
 The Salling Supply Co.  
 Salina, Kan.  
 San Antonio Machine & Supply Co.  
 Corpus Christi and Waco, Tex.  
 Southern Equipment Co.  
 San Antonio, Tex.  
 Strong, Carlisle & Hammond Co.  
 Cleveland, O.  
 Tay-Holbrook, Inc.  
 Sacramento, San Francisco, Fresno,  
 San Jose and Stockton, Calif.  
 The Tholen Bros. Supply Co.  
 Leavenworth, Kan.  
 The Topeka Steam Boiler Wks. Co., Inc.  
 Topeka, Kan.  
 Trimble & Lutz Supply Co.  
 Wheeling, W. Va.  
 Geo. E. Trudel Co.  
 Manchester, N. H.  
 U. S. Supply Co.  
 Kansas City, Mo., Wichita, Kan.,  
 Oklahoma City, Okla.,  
 and Omaha, Neb.  
 The Universal Supply Co.  
 Parkersburg, W. Va.  
 J. A. Walsh & Co., Inc.  
 Houston, Texas  
 Washburn-Garfield Co.  
 Worcester, Mass.  
 Western Maryland Supply Co.  
 Hagerstown, Md.  
 Wigman Company  
 Sioux City, Ia.  
 Wisconsin River Supply Co.  
 Wausau, Wis.  
 Yelton-Weaver Supply Co.  
 Springfield, Ill.

## THE HERMAN NELSON CORPORATION

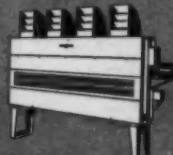
Manufacturers of Quality Heating and Ventilating Products  
 GENERAL OFFICES AND FACTORIES LOCATED AT MOLINE, ILLINOIS



Herman Nelson  
Belt Drive  
Unit Blowers



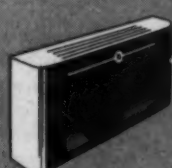
Herman Nelson  
Direct Drive  
Unit Blowers



Herman Nelson  
Mower-Fan Type  
Unit Heaters



Herman Nelson  
De Luxe Unit Heaters



Herman Nelson  
Unit Ventilators



**This Applies to Stoker Franchises Too!**

🐦 The more you take a hard-headed, *bird-in-the-hand* stand on dealerships, the more you're going to like what goes with a Fairbanks-Morse Stoker Franchise. For example, the *sales advantage* of an advertising campaign and a merchandising plan that top the industry in aggressiveness . . . and *service advantage* of the fully organized, fully experienced engineering department!

🐦 You'll like, too, the *competitive advantage* of a line designed not only to satisfy every domestic and commercial need for hopper and bin fed stokers but also to provide you with exclusive features in every model.

🐦 Finally, you'll like the *prestige value* of a name that has been known and respected in every part of the country for 115 years.

☆ Yes, the Fairbanks-Morse Stoker Franchise is one calculated to appeal to you and every businessman who prefers profits to promises. Why don't you write or, better yet, phone today for details about a dealership in your territory. One may be open, you know.

## Fairbanks-Morse Automatic Coal Burners

**THIS MONTH 30 MILLION AMERICAN FAMILIES WILL BE SOLD ON FAIRBANKS-MORSE STOKERS**

When Fairbanks-Morse sets out to gain the immediate advantage for its dealers, it doesn't fool around. This month, for instance, it is turning over to them the sales opportunities created by its hard-hitting campaign in this border-to-border list of publications. Check it for what it means to you, locally as well as nationally.

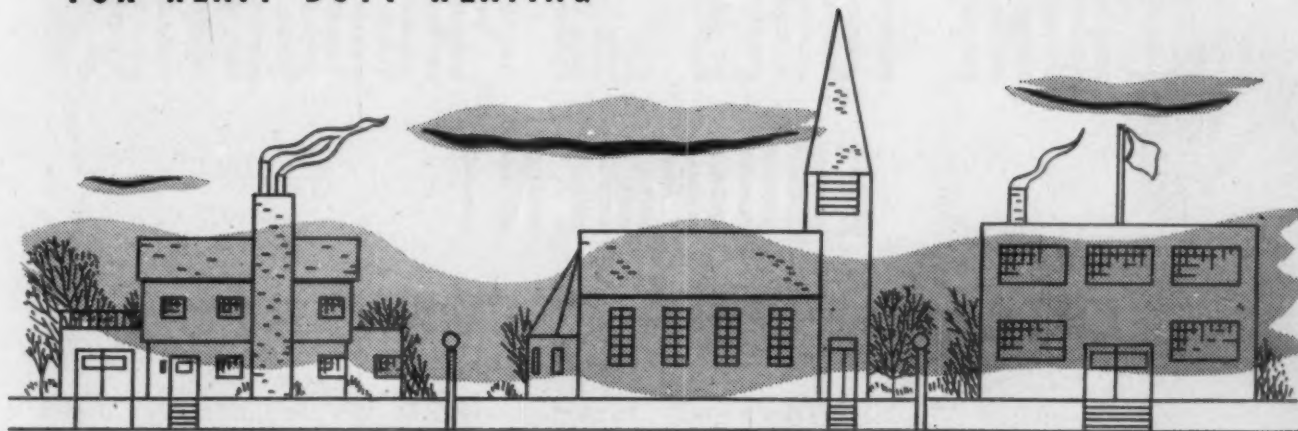
Chicago Tribune  
Milwaukee Journal  
Des Moines Register  
St. Louis Post Dispatch  
Kansas City Star  
Omaha World Herald  
Grand Rapids Herald  
Minneapolis Tribune  
Rochester Democrat & Chronicle  
LaCrosse Tribune Leader Press  
Toledo Blade  
Sioux Falls Argus Leader  
 Fargo Forum

Cedar Rapids Gazette  
Knoxville News Sentinel  
Cleveland Plain Dealer  
Cincinnati Inquirer  
Nashville Tennessean  
Birmingham News & Age-Herald  
Atlanta Journal  
Raleigh News Observer  
Norfolk Ledger Dispatch  
Norfolk Virginia Pilot  
Washington Times Herald  
Philadelphia Inquirer  
Harrisburg News Patriot

New York Times  
Boston Herald  
Denver Post  
Salt Lake City Tribune  
Boise Statesman  
Seattle Post Intelligencer  
Chattanooga Times  
Duluth News Tribune  
Fl. Wayne Journal Gazette  
Terre Haute Star Tribune  
Beloit, Wisc. News  
Three Rivers, Mich. Commercial Appeal  
Freeport Journal Standard

# J & C POWER HEATERS

FOR HEAVY DUTY HEATING



Whether it's a large home,  
school, or church, you can heat it  
better with a J & C furnace

Heating a large home, school, church, or similar roomy structure is usually a complicated, expensive proposition—but it becomes simple and economical with a J & C Power Heater. The improved design and advanced engineering principles of J & C Power Heaters insure a maximum output of heat on a minimum of fuel.

The remarkable efficiency with which these modern furnaces solve big heating problems is influencing more and more customer-wise, profit-wise dealers to handle the complete line of J & C Power Heaters. Available in sizes and models to meet the requirements of all domestic and many commercial installations, J & C furnaces afford the dealer an easy entrance into a greater sales field. Their proven performance, their readily appreciated engineering refinements, and their handsome streamlined design make J & C heaters easier to sell in that highly competitive field.

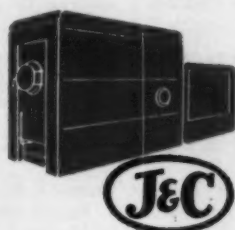
Here are a few of the many J & C superior design and construction advantages that assure heating efficiency, genuine sales appeal, and customer satisfaction: 90% direct radiation surface—a greater area for throwing off more heat for distribution

on less fuel. Easy adaptability to burn either coal, gas, or oil. Optional hand or mechanical firing in heavy-duty models. Winter air-conditioning unit—a blower which delivers a constant flow of filtered warmth, a complete change of air every ten minutes. Sturdy one-piece, electrically welded construction.

## NEW J & C DEALER POLICY MEANS MORE PROFITS FOR YOU

The dealer handling J & C heating equipment gets full sales and engineering co-operation from factory and wholesale jobbers. Every sales lead in every J & C dealer's territory is turned over to him. His retail trade remains exclusively his, and no Jackson & Church Co. "factory representatives" or jobber's agents will raid it. The J & C dealer will be supplied with expert engineering assistance when special installations demand.

The complete line of superior J & C Power Heaters and the dealer policy make a J & C dealership a sound, profitable franchise. Your territory may be open. Call, wire or write today for full particulars.



JACKSON & CHURCH COMPANY • ESTABLISHED 1881 • SAGINAW, MICHIGAN

# GOVERNMENT SURPLUS MACHINE TOOLS and PRODUCTION EQUIPMENT

## CAN HELP YOU RECONVERT!

Government-owned Machine Tools and Industrial Equipment are available now to help industry shoulder the reconversion load.

It is the responsibility of the Reconstruction Finance Corporation to dispose of these surpluses as soon as possible—to

turn them over to private industry, where they'll do the greatest good for the most people in the shortest time.

Therefore, in order to speed reconversion by getting this equipment into the hands of skilled craftsmen, faster . . . we ask you to follow this simple procedure:

- ① Submit in writing your requirements for machine tools and industrial equipment to us now.
- ② Send a typewritten list to your nearest R.F.C. Regional Office listed below.
- ③ Make your descriptions brief, one line if possible, clearly grouping various types of equipment you need.

The supply of surplus tools is sufficient to meet all of the needs of industry, and in the event that your local R.F.C. Regional Office cannot fill your specific requirements, it will endeavor to locate needed equipment from other offices throughout

the country.

First step in creating jobs is getting machines in motion faster.

The 31 strategically located agencies below are ready to make your reconversion problems easier.

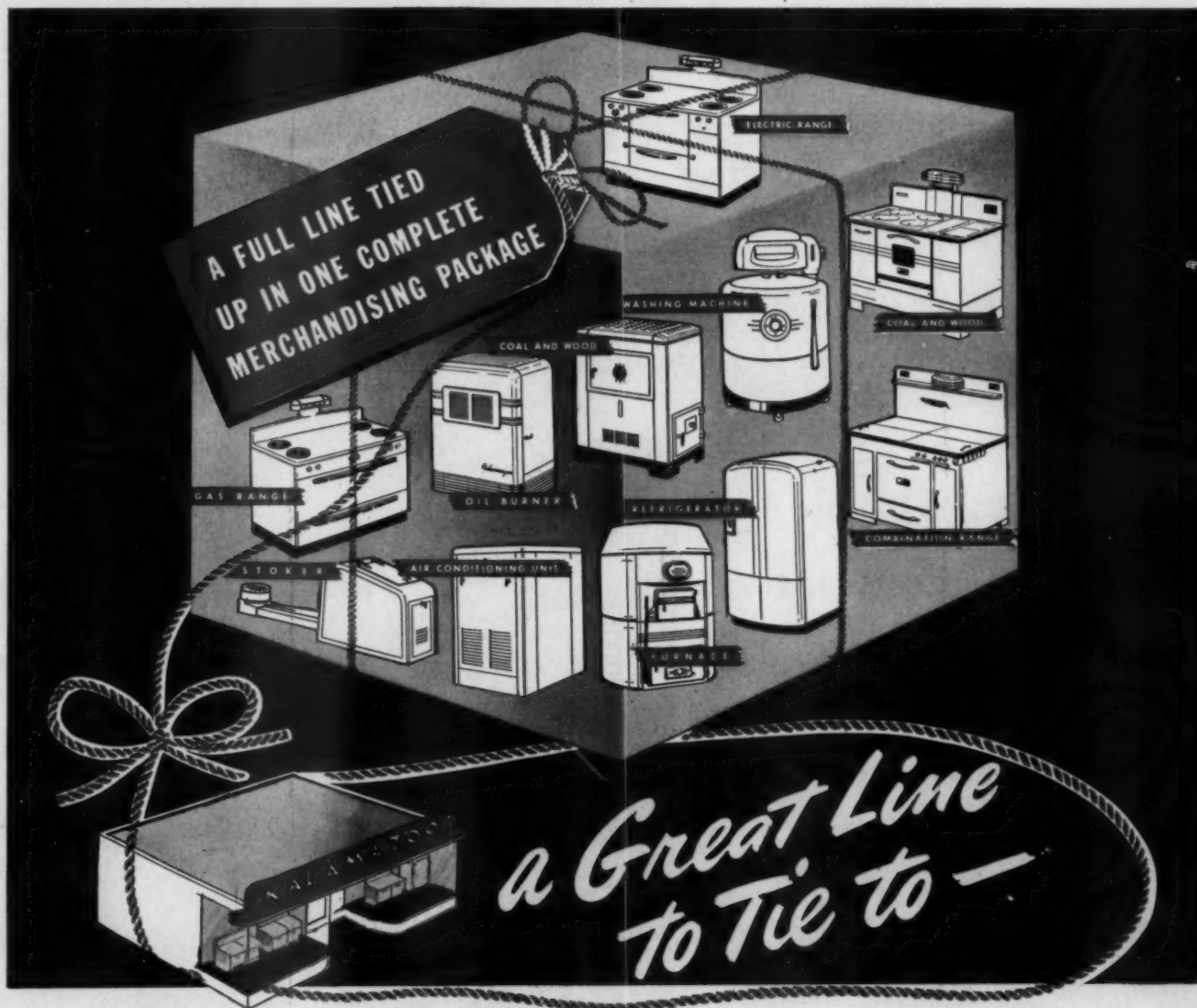


## RECONSTRUCTION FINANCE CORPORATION

A DISPOSAL AGENCY DESIGNATED BY THE SURPLUS PROPERTY ADMINISTRATION

Agencies located at: Atlanta • Birmingham • Boston • Charlotte • Chicago • Cleveland • Dallas • Denver  
Detroit • Helena • Houston • Jacksonville • Kansas City, Mo. • Little Rock • Los Angeles • Louisville  
Minneapolis • Nashville • New Orleans • New York • Oklahoma City • Omaha • Philadelphia  
Portland, Ore. • Richmond • St. Louis • Salt Lake City • San Antonio • San Francisco • Seattle • Spokane

104



## THE KALAMAZOO PROFIT-WISE FRANCHISE



The Kalamazoo "package program" contains more than a complete line of newly-designed products.

It includes business counsel and dealer assistance that no manufacturer has ever been able to offer franchise dealers before.



It's available now for the first time because for 45 years Kalamazoo has sold only by mail and through factory-owned stores. Kalamazoo has had the closest, most intimate contact with consumers of any manufacturer in the stove and furnace industries. Now franchise dealers are offered a chance to take advantage of Kalamazoo's wide consumer "know-how".



Kalamazoo—with long experience in managing its own stores—knows where to stop "loss leaks" and keep you on the "profit side". A successful accounting method for checking profit and loss leaks can be set up on request.

Two million dollars have been poured into re-tooling and streamlining the Kalamazoo production line to give you a quality line with great profit possibilities.

For complete information, write to Sales Manager, Kalamazoo Stove and Furnace Co., 453 Rochester Avenue, Kalamazoo 6, Mich.



# ARE YOU SET FOR GREATER OIL BURNER SALES?

## PETRO

resources, reputation and  
engineering leadership  
offer new  
opportunities to strengthen  
your selling position!

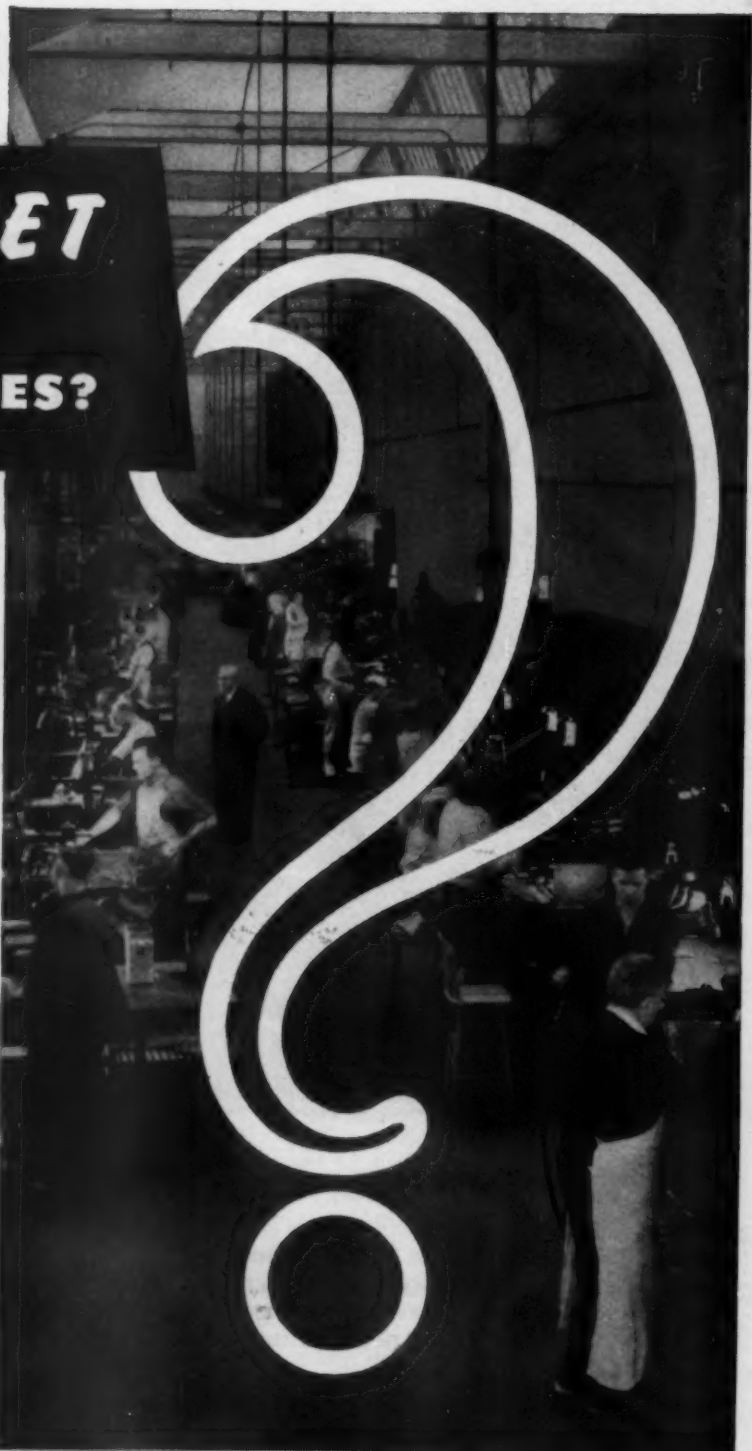
MAKE NO MISTAKE! After the first flurry of oil burner buying, it will take equipment with that *extra competitive something* to clinch sales and build up volume of business.

The Petro name—on oil heating equipment anxiously awaited by home owners the country over—can be a powerful factor in determining just how big *your share* of the domestic oil heat sales and profits *will be!*

For more information about the new Petro Oil Burners and other new Petro developments, as well as the name of your nearest heating wholesaler, contact. . .

### PETROLEUM HEAT AND POWER COMPANY Stamford, Connecticut

Petro Fuel Oil bulk plants, distribution terminals and facilities in:  
Boston • Providence • Stamford • Mt. Vernon • New York • Long  
Island • Newark • Philadelphia • Baltimore • Washington • Chicago



# PETRO

MAKERS OF GOOD OIL BURNING EQUIPMENT SINCE 1903

# This is it!

## The New Postwar LAU BLOWER

**New!**

OFF-SET IN  
SCROLL SIDES

**New!**

BEARING BRACKET

**New!**

BEARING ASSEMBLY

**New!**

Positive Alignment of  
WHEEL TO VENTURI

**New!**

HOUSING BASE

**New!**

1-PIECE  
MOTOR MOUNTING

**New!**

REDESIGNED SCROLL

**New!**

DISCHARGE  
OUTLET DESIGN

**New!**

CENTER  
SUSPENSION-TYPE  
WHEEL



Patents Applied For

### NEW LAU "A" SERIES BLOWER ASSEMBLY — THE MOST ADVANCED UNIT EVER OFFERED ON THE MARKET

• Now you can have the last word in product development—result of years of research and design evolution—the new, vastly improved LAU "A" SERIES BLOWER ASSEMBLY. It is the all-time, outstanding achievement in the blower field. Many features are revolutionary—exclusive with Lau—and *protected*. Laboratory- and wind tunnel-tested for performance

and long life. Entire unit is die formed—no hand made parts whatsoever—lending itself to mass production on precision-built equipment with reflected low costs. Overall size considerably smaller than formerly. Will fit more jobs—outstrip all competition. Offered in complete range of sizes. Write or wire for description, dimensions, performance data, prices.



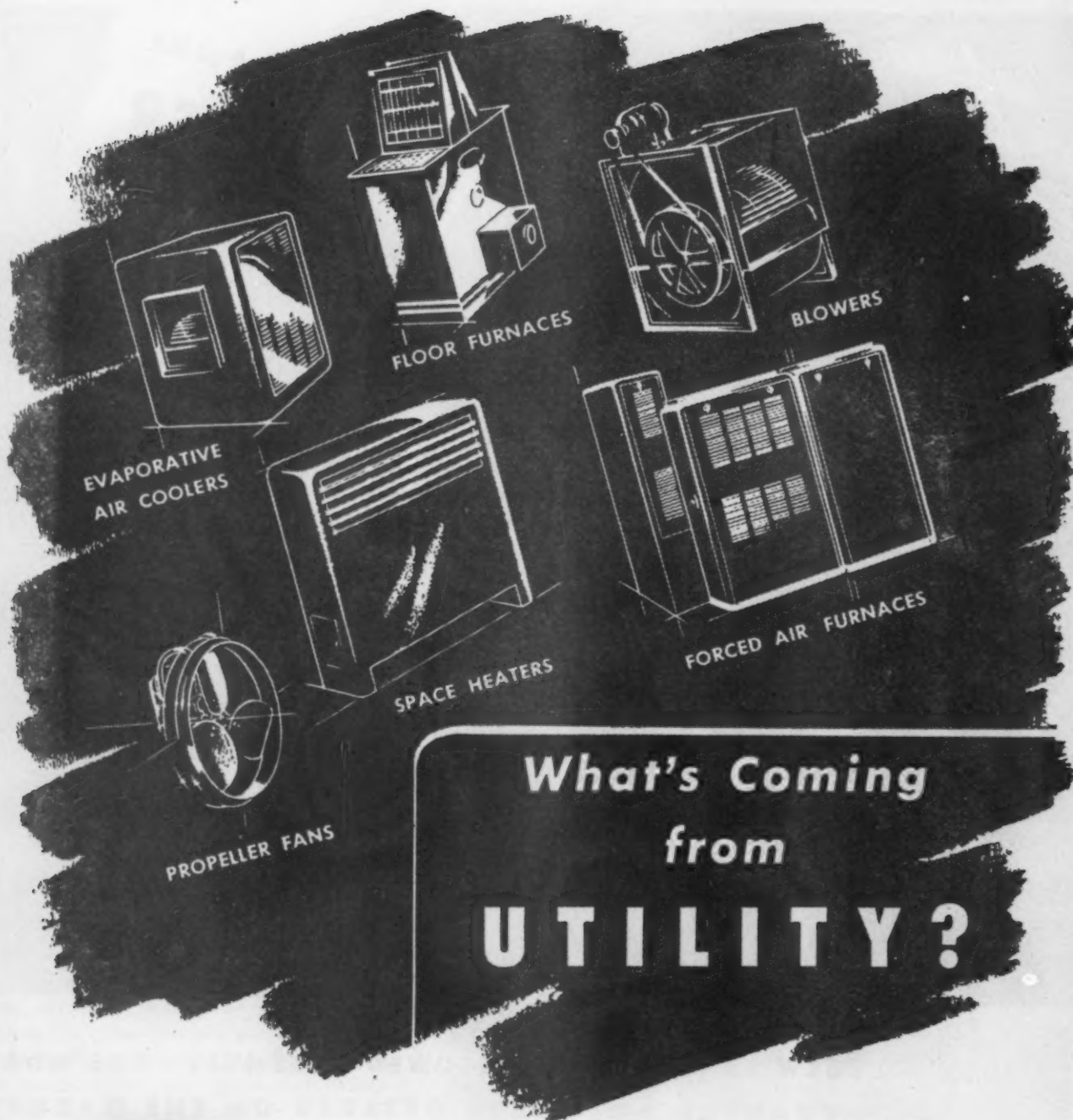
# LAU

## BLOWER COMPANY

DAYTON 7, OHIO, U. S. A.

WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment • Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories



## What's Coming from **UTILITY?**



You can definitely count on the new products we will introduce in the home appliance field to set high records for turnover and dealer profits. Our present line of heating, cooling, and air-moving appliances, and the new ones now being added, will become available in plenty of time to help you cash in on the greatest pent-up consumer demand in history.

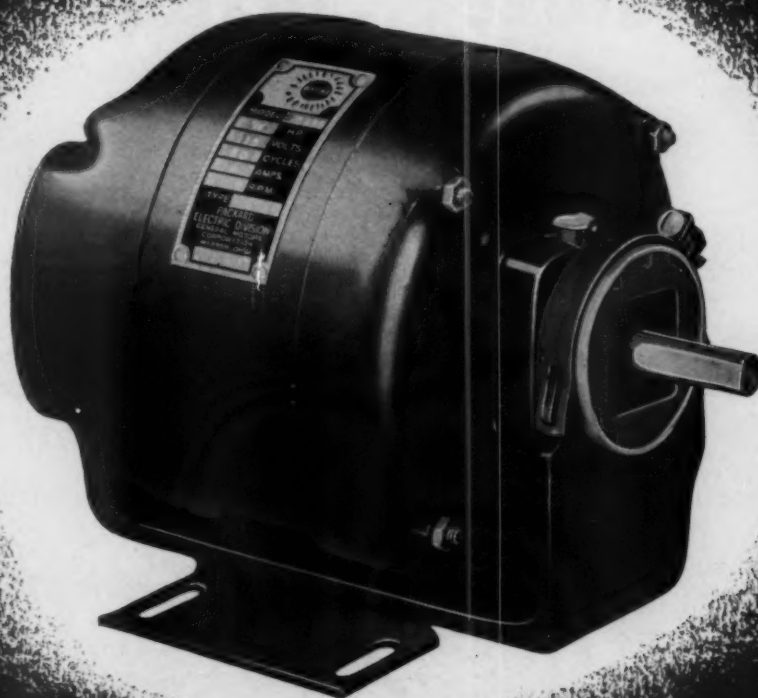
Manufacturers of the famous  
Utility evaporative air coolers  
(the original Desert Kooler),  
Fans, Blowers, Floor Furnaces,  
Forced Air Furnaces and Fan-  
Equipped Space Heaters  
(console type).

### **UTILITY APPLIANCE CORP.**

*Formerly Utility Fan Corporation*

**4851 S. Alameda • Los Angeles 11, Cal.**

# PACKARD SUNLIGHT MOTORS



*Designed and built for  
your particular job*

The motor you adopt for your product should be a motor designed for the job you have in mind—not just a stock model taken down off the shelf. It should be a motor that “fits” your space dimensions—that provides exactly the right torque and running characteristics—that is constructed to provide rugged, dependable service.

In shaping your plans for new products, let Packard engineers design this motor for you. Years of know-how in engineering, production and research in making millions of motors for nationally known products are at your command.

The features that mean so much to quality are built into every Packard Sunlight motor: full-rated starting capacity to prevent starting strains; self-oiling cast bronze journals to reduce friction and minimize the need for servicing; full-gauge copper wire to cut down heat generation, and extra-heavy coatings of dielectric insulation on all wiring to guard against short-circuits.

If you have a motor problem, let Packard design a motor to do that job better.

*Packard*  
REG. U.S. PAT. OFF.  
TRADE MARK

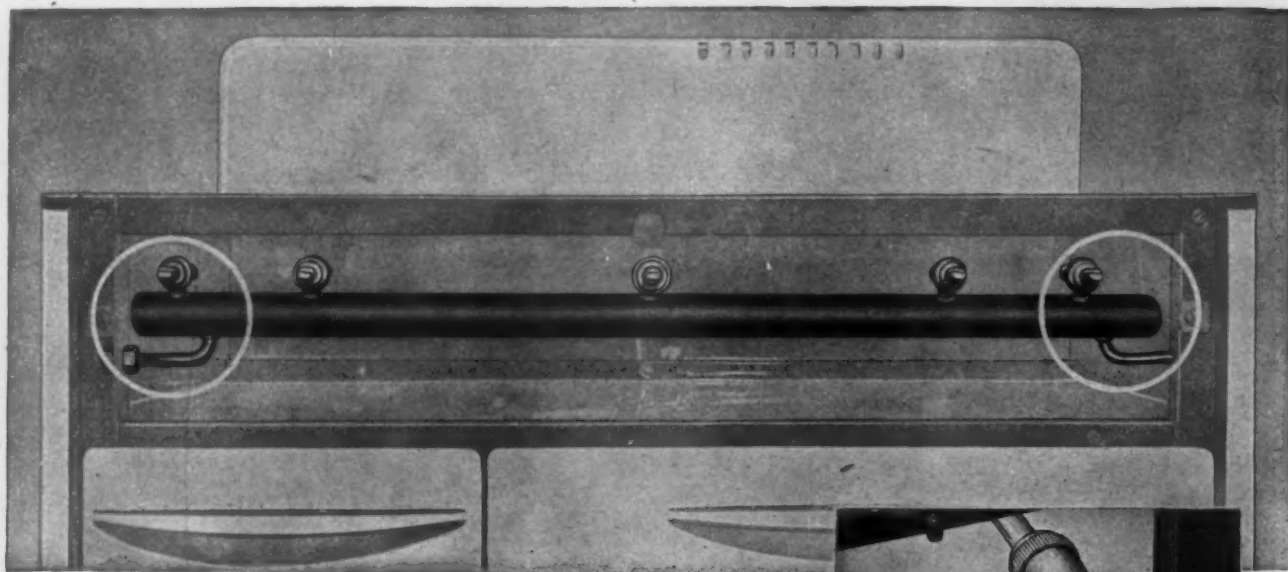
BUY MORE VICTORY BONDS

Packard Electric Division, General Motors Corporation, Warren, Ohio

**PACKARD SUNLIGHT MOTORS for: compressors . . . washing machines . . . power-driven bench tools . . . ironers . . . milk separators . . . milking machines . . . furnace blowers . . . stokers . . . oil burners . . . water pumps . . . ventilators . . . and many other applications.**

**DEPENDABLE APPLIANCE MOTORS FOR TWENTY-NINE YEARS**

# How stud welding helped produce a better stove...faster!



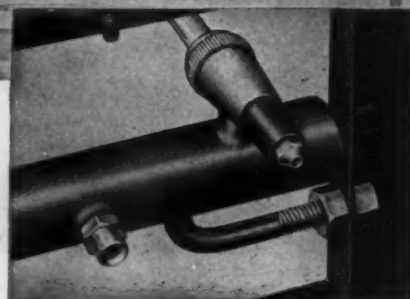
*This is the story of how a stove manufacturer used stud welding to save production time and cost—and obtain a better product*

**NELSON** Stud Welding is a means of automatically end-welding studs. Flux-filled studs in all diameters from 3/16" to 3/4" are welded in *less than one second*. The result is a stud completely fused to metal without distortion—equal in strength to studs secured by any other method.

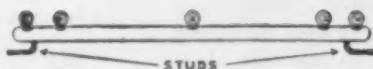


Formerly cast iron was used for the Feed Pipe. Now a black-iron pipe is

*At right is a closeup of the complete assembly showing how stud supports the Feed Pipe.*



used because of the stud welding, resulting in faster production, and a better gas system with longer life for the pipe.



Straight studs were welded to the 3/4" Dia. pipe and bent over after welding.

The studs are applied with the

Nelson Stud Welding Gun, using a standard welding generator. The operator inserts the stud into the gun chuck, locates the pointed end in position and pulls the trigger. The stud is welded instantly to the metal. The ease and flexibility of the equipment permits an operator to weld 500 to 1000 studs per day. Precision production units of one or more guns are available.

There are many similar problems that can be answered by stud welding. Write today for Catalog and Price List.

**NELSON SPECIALTY WELDING EQUIPMENT CORP.**  
Dept. AA, 440 Peralta Ave., San Leandro, Calif.

## NELSON STUD WELDING

# WAIT!

## until you know about the TIMKEN PROFIT PROGRAM

### Check

these  
**ADVANTAGES**  
of the  
**Timken Profit**  
**Franchise**

- Complete line of oil heating equipment for new homes or for modernization of present equipment.
- Quality products which can be sold successfully at a profit.
- Outstanding sales features, including the famous Timken Wall-Flame principle which requires only one moving part.
- Savings up to 25% in fuel and electricity costs, proved by reports from thousands of users.
- Consistent national magazine and factory-paid key city newspaper advertising.
- Well organized direct mail programs for dealer's prospect lists.
- Factory co-operation for dealer's local advertising program.
- Hard-hitting dealer sales helps and sales promotion material.
- Factory conducted sales and service schools.
- Unmatched public acceptance of all products.

Year after year, the Timken franchise has made more money for dealers—has been the most sought-after franchise wherever oil heating is sold. It is in every sense the **PROFIT FRANCHISE**.



Right now, you're probably being offered your choice of oil burner franchises . . . all types of burners, at all sorts of prices, with many different kinds of "deals."

*Take our advice, and WAIT!*

Get all the facts about the Timken franchise . . . the franchise that every Timken dealer knows is the real **PROFIT** franchise.

Why? Some of the reasons are given in the column at the left. No other franchise in the heating industry can give you *all* these advantages . . . many fran-

chises can not give you *any* of them.

If there is no Timken dealer in your territory (and there are some good territories open now), you may be able to secure the most sought-after franchise in the oil burner industry.

The opportunities in this field for the next few years are tremendous. Make sure you are in a position to take full advantage of the situation. You'll never regret signing up with Timken.

A request on your business letterhead will set the wheels in motion.

# TIMKEN

## *Silent Automatic*

Quality Home Appliances for Comfort, Convenience and Economy  
20 Years of Faithful Service to American Homes

Division of THE TIMKEN-DETROIT AXLE CO., Detroit 32, Michigan



## *Laboratory Assurance of Quality* **IN STEEL FROM STOCK**

Maintenance of Ryerson standards of uniform high quality begins in the laboratory—nerve center of the Ryerson quality control system. Here steels from our stocks are tested for tensile strength and ductility. Here we double check rigid performance specifications, determine hardenability data and prepare a special report on every heat of alloy in stock. A copy of this report is sent along with every shipment.

The assurance that your shipment of steel from stock meets laboratory standards of quality can effect important savings for you. And many gain improved results from their heat treatment department through the use of the Ryerson alloy reports. Whether you specify, buy or fabricate

steel, our high quality standards protect your production and give you more for your steel dollar.

Laboratory equipment for the testing of Ryerson steel includes: Brinell and Rockwell hardness machines, tensile testing and Erichsen machines, hot acid etch apparatus for determining structure, electric heat-treating furnaces and Jominy test equipment. These stand back of the large, diversified inventories in your nearby Ryerson plant. Call, wire or write for high quality steel from stock.

Joseph T. Ryerson & Son, Inc., Steel-Service plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

Steels in Stock: Hot & Cold Rolled,  
Heat Treated Alloys • Allegheny  
Stainless • Tool Steel, etc.



Carbon Steel • Hot & Cold Rolled  
Bars • Structural • Plates  
Sheets • Tubing • Pipe, etc.

# **RYERSON STEEL**



## Our Combination October-November Issue

**Y**OUR October and November issues of American Artisan are combined in this one issue. It was impossible to get out our October issue in its regular form and on its regular publication date because, throughout most of the month of October, the operations of the large union printing plants of Chicago were suspended by a strike of the local compositors' union. It is in one of those plants that we contract for the printing of our magazine.

With the resumption of work, so much time had been lost and printing facilities were so jammed it would be months before we could get on schedule if we tried to go back and publish our October issue and then our November, December and succeeding regular issues.

Thus, this combination October-November issue was the only solution and, though in one package, we have incorporated in it as many features as possible that would normally have been in the two separate issues. You will note that the editorial content is well in excess of that of a normal issue. What is necessarily not included in this issue will be made up as extra material in succeeding issues.

As a result, we have not permitted this situation to cause any reduction in our reader service. We are sorry that it has meant a delay in our service.

We are grateful to our readers for their patience and know that they will understand that our experience was completely beyond our control. We are grateful, too, to our advertisers whose schedules were delayed and, in some cases, interrupted but who, in every case, have willingly shifted to accommodate these changes.

Our future issues will be on regular publication dates.

# NEWS SUMMARY OF THE MONTH

## "Easy" Labor Market—Not Yet

THE "easy" labor market and plentiful supply of labor which many employers confidently expected at the end of the war has not materialized. And, unless present trends change greatly, there does not seem to be any surplus supply of labor in prospect.

In our own industry, we did not anticipate any enormous increase in mechanics. We did anticipate some returning veterans. And we did expect some mechanics who had gone into war plants, shipyards, plane plants, etc., to return. But except in some areas there still remains a great need for mechanics.

Right now the number of "unemployed" is at least one million persons below the number our labor forecasters told us to expect. More than 700,000 unfilled jobs are listed now by the USES. But the bulk of these jobs are in "service" or "soft" industries and the pay is less than 75 cents per hour so displaced war workers accustomed to at least 20 per cent higher pay rates and extra "bonus" money are spurning these jobs.

Layoffs are fewer than expected. Some industries converted faster than expected; some industries didn't even have to "convert"; some companies are still turning out war goods. The labor market will become "easier" but we have to revise our sights as to when, how fast, and in how large a volume.

## Warehouse Orders Unrated

THE stock replacement plan under which steel warehouses obtained their supplies from the steel mills during the greater portion of the wartime period has been eliminated.

This action, which has been accomplished by the revocation of Direction 3 to the General Preference Order (M21) places warehouses in the same buying category as all other steel purchasers, following the expiration of the Controlled Materials Plan on September 30.

Warehouses will now place all of their orders on the mills on an unrated basis, except to the extent that they extend priority ratings still in effect. These ratings are: the "AAA" emergency rating, the "MM" military rating and the "CC" rating (for bottleneck items only). The latter rating cannot be extended by warehouses, however, to replace any materials sold from stock.

## Level of Business

MANY forecasts are being made on the level of expected business, labor, unemployment. Each forecaster bases his figures on certain facts and factors. A typical forecast which is somewhere between the optimistic and pessimistic is as follows:

Almost 52 million persons were employed on V-E day; some 12 million persons were in the armed forces; about 1 million persons were unemployed.

At the end of 1945 this forecaster sees: some 47 millions working; over 9 millions still in the armed forces; perhaps 6 millions unemployed. In June of

1946 these figures will be: 50 millions working; only 4 millions in the armed forces; perhaps 6 millions unemployed.

At the end of 1946: 52 million job holders; somewhere over 3 millions in the armed forces; perhaps 5 millions unemployed.

In spite of the fact that almost as many persons will be working at the end of 1946 as were working on V-E day, the total wages received will be substantially under the take-home pay on V-E day unless the present drive by labor for wage increases meets with success.

## Higher Home Building Costs

ROY WENZLICK, nationally known real estate analyst of St. Louis recently told the Illinois chapter of the American Institute of Real Estate Appraisers that a typical six room frame residence which could be built for \$3,836 in 1914 will cost more than \$10,000 before the post-war building boom ends. He further said that building costs are already 108 per cent higher than they were at the bottom of the depression.

Wenzlick said careful studies of everything used in building a typical home over a period of 30 years disclosed these upward trends in cost: From the \$3,836 figure of 1914 it rose five years later to \$7,678. The estimate slid back temporarily in the depression to \$4,480, but by July, 1939, it had reached \$5,923.

On Sept. 1, 1945, the cost of this standard home had soared to \$9,341, an increase of 58 per cent over the cost at the beginning of World War II and 108 per cent higher than the depression low, he said.

"So far in American history there never have been more than 800,000 residential units erected in this country in one year," he said. "I expect 200,000 units will be completed this year. Next year it will increase to 500,000 in the entire country. In 1947 it will be 700,000; in 1948 about 800,000. The peak will be reached in 1949 when the total will be 1 million, or 200,000 above the former highest point.

"And then the trend will be downward with the 1950 total dropping to 800,000. I assume, of course, that the federal government is going to build a large percentage of these units."

Wenzlick said he believed eventually most residential units will be prefabricated but it probably will not be for at least 40 years.

The building boom, however, is not developing as fast as some people believe, Wenzlick said. There may be several months of "backing and filling" before it gets under way. No one is going to see building costs at the 1939 level for nine or 10 years, he said, possibly for a lifetime. If construction costs should drop to pre-war levels by 1947 or 1948 Wenzlick said real estate will undergo one of the heaviest deflations in a relatively short time that it has ever seen.

## Want a WPB Man?

WPB's Industry Personnel Committee has

been set up to acquaint industry with the human assets which are available to it. In the committee's files are the experience records and personal qualifications of auditors, cost accountants, credit managers, public bookkeepers and calculating and IBM operators—all of whom had a working share in converting industry from peace to war. They are now free to use the knowledge and skill acquired in the process, to aid industry and finance in reconversion to peace.

Business firms needing personnel may run through these files in WPB's offices in New York, Chicago or Washington, or write directly to the Industry Personnel Committee, 2060 Railroad Retirement Building, Washington, D. C., which will recommend qualified staff members to them. Communications will be held in confidence during negotiations, at a firm's request.

### Price Increase for Controls

**A**N INDUSTRY-WIDE price increase factor of five per cent was established by OPA October 9 for use in computing reconversion ceiling prices for automatic electric temperature control equipment.

Through establishment of this factor, both manufacturers and resellers of automatic electric temperature controls for all heating, air conditioning and refrigeration except industrial processing controls, may calculate their new 1945 ceiling prices by adding five per cent to their pre-war prices.

In the case of manufacturers, present ceiling prices are those at which individual producers delivered or offered to deliver equipment on October 1, 1941.

To determine ceilings, manufacturers may multiply their October 1, 1941, prices by the five per cent increase factor. The sum of the resulting figure and the October 1, 1941, price is the manufacturer's new 1945 reconversion price.

Resellers' present maximum prices are the highest prices they charged during March, 1942. Under today's action, they, too, may add five per cent to their present ceilings to obtain their new 1945 reconversion prices. Absorption of the increase is not required because these electric controls are seldom sold to individual consumers.

(Order No. 48 under Section 22 of Maximum Price Regulation No. 591—Specified Mechanical Building Equipment—effective October 9, 1945.)

### Casting Situation

**D**EMAND for gray iron castings will be at least 30 million tons this year, but the industry, beset by man power shortages and pricing difficulties, will produce only approximately 10 million tons of finished castings, Walter L. Seelbach, of Forest City Foundries and president of the Gray Iron Founders' Society, predicted at a two-day conference in Chicago.

Productive capacity of gray iron foundries is about 19 million tons a year, Seelbach said, and could be realized if the industry had full employment and a fairly good average output from such employment.

"Unless full production of castings is assured within a reasonable time, the reconversion program may be seriously retarded," he warned.

"The OPA must take a more realistic attitude toward the problem which confronts us, and maximum prices must be further adjusted to reflect increases in manufacturing costs. The office of war mobilization and reconversion must take cognizance of the man power shortage in the industry and take action.

"Our importance to reconversion," said Seelbach, "gives us the right to ask of the White House, congress, and all government agencies that they deal with us on a basis of cooperation, truthfulness, and willingness to understand our problems; that they see we are able to hire the men we need; that we can charge an adequate amount to operate our foundries with a fair profit.

"All control now governing gray iron foundries should be withdrawn and gray iron founders allowed to operate in an open market on a free basis, if reconversion is to be successful, if the public is to get its necessities, and if unemployment is to be kept to a minimum."

### New Alphabetical Agency

**W**AR Production Board soon will go out of existence and, as usual in government, another agency springs up to take its place. WPB's successor is called Civilian Production Administration.

Perhaps there is some solace for WPB had many thousands of employees; CPA will have a fraction of that number. And CPA is committed to removal of the few remaining production and materials controls as soon as possible.

J. D. Small, CPA head, has made it clear that CPA wants to help ditch government regulations and controls as rapidly as possible, asserting at the same time, however, that in a few cases, such as tin, there'll have to be some regulation for awhile.

As long as supply of a commodity remains thin, it will have to be spread thinly. CPA is a "bottleneck breaker"; it will preside over an orderly liquidation of government intervention in production.

### Termination Appeal

**I**NDUSTRY and government face the gigantic task today of settling hundreds of thousands of terminated subcontracts. These remnants of war must be cleared away promptly if we are to get on with the business of peace.

Let's do the job now!

The machinery for settling contracts is ready. It has been tested. Eighteen thousand military personnel are trained for this specialized task. Several times that number of contractors' representatives likewise are trained.

Our goal now is the final settlement of the bulk of contracts by the end of this year. But claims cannot be settled until they are filed.

Industry and government, teamed together, produced the vast supplies of war that made victory possible. Now this same team must work together to tie up the loose ends of war production. The Army and Navy want to get out of your business. It's Industry's move now.

Signed—

D. N. HAUSEMAN, Brigadier General, GSC  
Director, Readjustment Division.

H. L. MERRING, Rear Admiral, USN (Ret.)  
Chief Industrial Readjustment Branch  
Material Div. Office Asst. Secy. Navy.

### More Pricing Factors

**M**ANUFACTURERS of air conditioning units and equipment, automatic electrical control equipment, commercial and domestic stokers having a capac-

ity of less than 1,200 pounds per hour, have been given profit factors to be used in connection with the reconversion pricing orders of July 23. While these orders are mainly relief measures, they can be used to work out individual adjustments by those manufacturers who are ready to start civilian production ahead of other firms in the industry. As the industry-wide actions are taken for these industries, manufacturers may, if they wish, change to the industry-wide formulas, OPA said.

Reconverting manufacturers of eligible products may figure their new ceiling prices by adjusting their 1941 total costs for increases, since that time, in materials prices and basic wage rates of factory workers. The appropriate profit factors then is applied to that adjusted figure.

However, manufacturers with annual sales of less than \$200,000 may use either these profit factors, or their own average 1936-39 margins over cost. Concerns with annual sales of less than \$50,000 may base their reconversion ceilings on total current costs instead of on adjusted 1941 costs.

Forms for use in figuring reconversion prices are available in district and regional OPA offices, and completed forms are to be filed in district offices, OPA said. The prices filed by small firms automatically go into effect 20 days after filing unless the applicants are informed to the contrary by OPA. Larger concerns must wait for approval of their filed prices, OPA said.

The applicable profit factors are: automatic electrical control equipment—11.2; commercial and domestic stokers having a capacity of less than 1,200 pounds per hour—5.5; air conditioning units and equipment—4.9.

(Amendment No. 5 to Supplementary Order No. 118—Small Volume Manufacturers Reconversion Pricing and Amendment No. 4 to Supplementary Order No. 119—Individual Adjustments for Reconverting Manufacturers—both effective October 3, 1945.)

### Convention Ban Dissolved

**E**FFECTIVE October 1, 1945, ODT has eliminated all restrictions and bans on all conventions, group meetings and trade shows. ODT has asked sponsors of conventions, group meetings and trade shows to defer meetings whenever possible and keep necessary meetings small until after the peak of the troop movement early next year. However, this is merely a request and an ODT permit will not be required for any kind of gathering.

The only major ban remaining on railroad travel is the one on sleeping car services under 450 miles, and this is expected to be ended within a matter of weeks. Advance reservations by rail may now be made in 14 days instead of 5 days and this is expected to be further relaxed in the near future.

### 30 Hours Work—48 Hours Pay

**L**ABOR'S newest goal, if Washington reporters are to be believed, is 48 hours pay for a 30-hour work week. This is not wholly new for some labor groups have been clamoring for something like this since the early 30's. But previously labor wanted only 40 hours pay for 30 hours work. War time pay has upped the pay demands. United Rubber Workers (CIO) have already returned to the 36-hour

week in practice before the war, but now want full war wages. There are many demands reported today for a 40-hour week accompanied by wage increases of 20 to 30 per cent. We should look for more demands, say the reporters, for the six-hour day and the 30-hour work week.

### WMC Revocations

**T**HE following summary of regulations, general orders and directions revoked by the War Manpower Commission since the end of the war has been issued by WMC.

*General Order No. 3*, entitled "Designation of Certain Areas as Critical Labor Shortage Areas." Issued February 1, 1943. This order listed 32 critical areas to be placed under a minimum work week of 48 hours, as directed by Executive Order No. 9301. Rescinded August 16, 1945.

*General Order No. 5*, entitled "Minimum Wartime Work Week—Designation of Certain Areas." Issued February 22, 1943. Rescinded August 16, 1945.

*General Order No. 6*, entitled "Minimum Wartime Work Week—Designation of Certain Activities." Issued February 26, 1943. Listed the industries to which the 48-hour week would apply. Rescinded August 16, 1945.

*Regulation No. 3*, Part 903, Sections, 903.1 to 903.24 inclusive, entitled "Regulation No. 3—Minimum Wartime Work Week of 48 hours," as amended. Issued May 27, 1942. Outlined the basic procedure to be followed in the administration of the 48-hour week in designated industries and in designated critical labor areas where heavy war production schedules made effective utilization of available manpower imperative. Rescinded August 17, 1945.

*Regulation No. 4*, Part 904, entitled "Regulation No. 4—Transfer of Workers at Increased Rates of Pay." Originally issued April 18, 1943. In its original form, this regulation included provisions on transfer of workers that were later amplified and incorporated into Regulation No. 7. As amended in August, 1943, it prohibited the employment by an employer of a new employe, or the acceptance of employment by a new employe, at a wage or salary rate higher than that received by such new employe in his last employment. Violations were subject to penalty under the wage stabilization act. Rescinded August 20, 1945, with the approval of William H. Davis, Director of the Office of Economic Stabilization.

*Regulation No. 7*, Part 907, Sections 907.1 to 907.8 inclusive, issued August 16, 1943, entitled "Regulation No. 7—Governing Employment Stabilization Programs," as amended, and all employment stabilization programs promulgated pursuant thereto. Set the pattern for local employment stabilization programs by providing certain minimum standards to be allowed, such as restrictions on job transfers of essential workers, controlled referrals, etc. Amendments 1 and 2 to this regulation, issued in May, 1944, extended priority referrals to all labor market areas, and provided for employment ceilings. Amendment in October, 1944, and January, 1945, this regulation, providing for a relaxation of manpower controls after the surrender of Germany, was finally amended on July 30, 1945. Rescinded August 17, 1945.

*General Order No. 11*, entitled "List of Essential Activities," issued August 14, 1943, provided a list of essential activities. Rescinded August 16, 1945.

# *The Chicago Apprenticeship Plan*

## *(Part 2)*

Because apprenticeship training will be in the months to follow so important to our industry, American Artisan has been publishing during past months the apprenticeship plans of our Sheet Metal Contractors National Association, the Wisconsin State Plan and other material bearing on this problem. All these plans stem from the Chicago Plan. The Chicago Plan contains some features not found in the plans published, so because Chicago had the first recognized plan we publish here the second of two articles giving the Chicago Plan in complete detail.

### *Foreword*

Recognizing that there is no substitute for apprenticeship, there is a definite obligation on the part of the present generation of the Sheet Metal Industry to supply means for young men who will be their successors to obtain training and education to fit them for their responsibilities. Therefore, the Air Conditioning Contractors' Alliance, the Ventilating and Air Conditioning Contractors Association of Chicago, the Sheet Metal Contractors' Association of Cook County, and the Sheet Metal Workers' International Association, Local No. 73, of Chicago and Vicinity, having jointly resolved to establish trade training for apprentices in accordance with the recommendations of the Federal Committee on Apprenticeship, have collaborated in the preparation of these standards for the administration of such trade training that will provide apprentices in the Sheet Metal Industry with opportunities to attain the efficiency and versatility required for true craftsmanship that will help immeasurably to raise the level of workmanship for the trade generally and develop the necessary background for good citizenship.

### **Standards of Apprenticeship**

11. **Apprentice Work Card.** The apprentice shall carry a working card signed by the Chairman of the Joint Apprenticeship Committee and secretary of the Local Union No. 73, and this card shall designate the employer to whom the apprentice is assigned and the year of service. The apprentice shall pay for this card to the Local Union No. 73 the initiation fee and dues as provided in the by-laws and rules of the said union.
12. **Periodic Examinations.** Before the expiration of each six-month period, the apprentice shall be called before the Joint Apprenticeship Committee for examination, the apprentice to have a statement from his employer as to his progress on the job and a statement from his instructor as to his attendance and progress in related subjects. The committee shall examine the apprentice and determine whether the work specified for that period has been completed in a satisfactory manner. If the committee is satisfied with the progress of the apprentice, the committee shall issue to the apprentice and to the foreman a certificate to that effect, and then, and not until then, shall the apprentice be advanced to the next period. The foreman shall have the right to appear at any and all examinations.
13. **Supervisor of Apprentices.** The employer shall designate a particular person in the shop (this may be a foreman, journeyman, or shop steward) to be known as the "Supervisor of Apprentices." He shall, with the advice and assistance of the joint committee, be responsible for the apprentices' work experience on the job and the recording of same on the record form adopted for this purpose. It shall be his duty to see that this record form is complete in all details and forwarded to the Joint Apprenticeship Committee at the proper time for their information and record.
14. **Apprentice Record Card.** A master record of the apprentices' work experience and related instruction shall be kept by the Joint Apprenticeship Committee, this information to be furnished by the employer and local school authorities. The record cards and all data pertaining to the apprenticeship shall be the property of the Joint Apprenticeship Committee and shall be accessible to the members of the organizations at

all times.

15. **Agreement for Apprentices' Hours.** The hours of work for the apprentice shall be the same as those of a journeyman.
16. **Apprenticeship Agreement.** The apprentice and his parent or guardian (when he is a minor) shall sign an agreement which shall also be signed by the employer, approved by the Joint Sheet Metal Apprenticeship Committee, and registered with the Federal Committee on Apprenticeship. Every apprenticeship agreement entered into under these standards shall contain the provision and a special clause making terms and the conditions of the standards a part of the Apprenticeship Agreement. For this reason every apprentice, parent or guardian, and employer entering into an agreement shall be given an opportunity to read the standards.

The following shall receive copies of the apprenticeship agreement:

- (a) The apprentice;
  - (b) the employer;
  - (c) the union;
  - (d) the Joint Sheet Metal Apprenticeship Committee;
  - (e) the Federal Committee on Apprenticeship.
17. **Ratio of Apprentices to Journeymen.** The ratio of apprentices to journeymen shall be in conformity with the present or subsequent bargaining agreement.
18. **Composition of Joint Apprenticeship Committee.** The Joint Apprenticeship Committee is composed of nine members from the Contractors Associations and three members from the Union—three members to represent the Ventilating & Air Conditioning Contractors Association of Chicago; three members to represent the Air Conditioning Contractors' Alliance; three members to represent the Sheet Metal Contractors' Association of Cook County; three members to represent the Sheet Metal Workers' International Association, Local No. 73, of Chicago and Cook County. Each

CHICAGO and VICINITY  
SHEET METAL APPRENTICESHIP COMMITTEE  
for the  
SHEET METAL INDUSTRY  
APPRENTICE'S MASTER RECORD CARD

Last		First		Middle	
Date _____ 19____ Age _____					
Sex: _____ Height: _____ Weight: _____					
School Completed _____					
Schooling _____					
Sec. No. _____ Phone _____					
at or Guardian _____					
Birth: _____					
Nationality: _____					
1 of Apprenticeship (incl. credit 10,000 Hours) _____					
Total Credit _____					
Apprenticeship Term Begun _____ Date Inductured _____					
Apprenticeship Completed _____ 19____ Certificate No. _____					
Other _____					
SUGGESTED WORK SCHEDULE					
A. General Sheet Metal Work.					
B. Operation of hand and machine tools.					
C. Ventilation and air conditioning.					
D. Exhaust and blow pipe work.					
E. Roofing, spouting, and guttering.					
F. Canopies and skylights.					
G. Gravity and forced air furnace work and servicing the same.					
H. Warm air heating.					
I. Special installation and specialty work.					
J. All-around work.					
LENGTH OF TIME (HOURS) SPENT EACH MONTH ON EACH PROCESS LISTED IN WORK SCHEDULE					
Month _____					
DAY A B C D E F G H I J K L M N O P Q					
1 _____					
2 _____					
3 _____					
4 _____					
5 _____					
6 _____					
7 _____					
8 _____					
9 _____					
10 _____					
11 _____					
12 _____					
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17 _____					
18 _____					
19 _____					
20 _____					
21 _____					
22 _____					
23 _____					
24 _____					
25 _____					
26 _____					
27 _____					
28 _____					
29 _____					
30 _____					
31 _____					
Total _____					

Master record card kept by the Joint Apprenticeship Committee from information furnished by the employer and local school authorities.

SHEET METAL JOINT APPRENTICESHIP COMMITTEE  
CHICAGO AND VICINITY

APPRENTICE'S MONTHLY RECORD CARD

Name _____		Wage Rate _____		¢ per Hour	
Employer _____		Month _____		19____	
HOURS WORKED ON EACH TYPE OF OPERATION		Instructions for Filing in Monthly Work Record:		RATINGS	
DAY A B C D E F G H I J TOTAL		Fill in the apprentice's name and wage rate.		WORK SPEED ATTITUDE	
1 _____		Fill in the employer's name and the month during which the work experience occurred.		1 _____	
2 _____		Fill in under work process symbol ABC, etc., the hours worked during each day on the type of operation outlined in the work processes on the reverse side of this record form.		2 _____	
3 _____		Fill in under "Ratings" the columns "work" (workmanship), "speed" and "attitude," using the following symbols: E—excellent; G—good; F—fair; P—poor.		3 _____	
4 _____		At the end of each month the form should be checked to see that it is properly filled in and necessary signatures attached, and then mailed to the Sheet Metal Joint Apprenticeship Committee.		4 _____	
5 _____				5 _____	
6 _____				6 _____	
7 _____				7 _____	
8 _____				8 _____	
9 _____				9 _____	
10 _____				10 _____	
11 _____				11 _____	
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Total _____		Average _____		Average _____	
Supervisor of Apprentices _____		Shop Steward _____			

member of the Contractors' Associations or their successors will have one-third vote. Each member of the Union will have one vote.

19. **Administrative Procedure.** (a) The Joint Apprenticeship Committee shall elect a chairman and secretary and shall determine the time and place of regular meeting.

(b) The chairman and secretary shall have the power to vote on all questions.

(c) When, in any year, the chairman of the Joint Apprenticeship Committee is a representative of the contractors, then the secretary shall be a representative of the union, or vice versa.

(d) The Joint Apprenticeship Committee shall establish such additional rules and regulations governing its administrative procedure as are required.

20. **Duties of the Joint Apprenticeship Committee.**

(a) To determine the need for apprentices in the locality and the shop facilities available for the necessary experience on the job.

(b) To determine the adequacy of an employer to give proper training.

(c) To see that apprentices are under written apprenticeship agreements.

(d) To establish minimum standards of education and experience required of apprentices.

(e) To approve apprenticeship agreements between the employer and the apprentice and to submit these agreements for registration to the Federal Committee on Apprenticeship.

(f) To determine the quality and quantity of

experience on the job which the apprentice must have and to be reasonably responsible for his obtaining it.

(g) To hear and adjust all complaints of violation of apprenticeship agreements.

(h) To arrange tests for determining the apprentices' progress in manipulative skill and technical knowledge.

(i) To maintain a record of each apprentice, showing his education, experience, and progress in learning the trade.

(j) To make an annual report covering the work of the Joint Apprenticeship Committee to the contractors, the union, and the Federal Committee on Apprenticeship.

(k) To be responsible in general for the successful operation of these standards by performing the duties here listed, by cooperating with public and private agencies which can be of assistance, by obtaining publicity, in order to develop the support of the public in apprenticeship, and by keeping in constant touch with all parties concerned—apprentices, employers, and journeymen.

(l) To notify the Federal Committee on Apprenticeship of all terminations or cancellations of apprenticeship agreements.

(m) To recommend to the Federal Committee on Apprenticeship when apprentices have completed their apprenticeship and to affix their signatures to the certificate of completion of apprenticeship.

21. **Continuity of Employment.** When an employer is assigned an apprentice, he may take him on a probationary period for sixty (60) days. If, during these sixty (60) days of probationary period, the employer finds the boy is not suitable or unable to learn the trade, he shall notify the Joint Sheet Metal Apprenticeship Committee in writing to this effect, and the indenture will be nullified. But, after a satisfactory completion of the probationary period, he shall undertake to keep him at work at the trade for not less than ten (10) months in each year, except in case of strike, lockouts, sickness, or other unavoidable causes, or by action of the Joint Sheet Metal Apprenticeship Committee. Where it is impossible for one employer to provide the diversity of experience necessary to give the apprentice all-around instruction in the trade, the Joint Apprenticeship Committee may transfer the apprentice, temporarily or permanently, to another employer, in which case the employer to whom the apprentice is assigned will assume all the obligation of the original employer, but in no case shall an apprentice be transferred to a shop where there is a labor dispute. It is agreed that any apprentice who is laid off due to the return from military or naval service of an apprentice who has priority rights shall be given the first opportunity available in any shop to complete his apprenticeship.

22. **Official Approval.** Before becoming operative, the standards must have the official approval of the contractors, the union, and the Federal Committee on Apprenticeship.

23. **Adjusting Differences.** In case of dissatisfaction between the employer and the apprentice, either party has the right and privilege of appeal to the Joint Apprenticeship Committee for such action and adjustment of such matters as come within these standards. The Federal Committee on Apprenticeship may be consulted on the interpreta-

## APPENDIX—PART A Apprenticeship Agreement

THIS AGREEMENT, entered into this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_

between \_\_\_\_\_ hereinafter referred to as the EMPLOYER, of \_\_\_\_\_

\_\_\_\_\_ born \_\_\_\_\_ (Month) \_\_\_\_\_ (Day) \_\_\_\_\_ (Year) hereinafter referred to as APPRENTICE, and if a minor, \_\_\_\_\_ (Name of Parent or Guardian) hereinafter referred to as his PARENT GUARDIAN

Witnesseth that the EMPLOYER, the APPRENTICE and his PARENT (or GUARDIAN) are desirous of entering into an agreement of apprenticeship in conformity with the Standards of the Sheet Metal Joint Apprenticeship Committee of Chicago and Vicinity, and the fee, in consideration of the premises and of the mutual covenants herein contained, they do hereby mutually covenant and agree as follows:

That the EMPLOYER agrees to employ the APPRENTICE for the purpose of enabling said APPRENTICE to learn and acquire a trade or craft of Sheet Metal, upon the terms and conditions contained in the Apprenticeship Standards attached to this agreement and made a part hereof.

That the APPRENTICE agrees to perform diligently and faithfully the work of said trade or craft during the period of apprenticeship, complying with the training program contained in said Standards.

That the PARENT (or GUARDIAN) covenants with the EMPLOYER that the APPRENTICE will duly perform all obligations and when herein.

That the apprenticeship term begins on the \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_ and terminates upon the completion by the APPRENTICE of five years of employment for said EMPLOYER in said trade or craft stipulated in the said Standards.

That this agreement is subject to the approval of the Sheet Metal Joint Apprenticeship Committee of Chicago and Vicinity, and shall be registered with the Federal Committee on Apprenticeship. After approval, cancellation will be made by said Committee or upon its own motion after notice to the parties and opportunity to be heard. During the probationary period, this Agreement may be cancelled by the Committee without the formality of such notice or hearing upon request of either party to the Agreement. The Committee shall notify the Federal Committee on Apprenticeship of the cancellation of this Agreement.

That the APPRENTICE may be transferred to another employer under a supplementary agreement which shall be subject to the unfulfilled terms and conditions of this agreement. A copy of such supplementary agreement shall be registered with the Federal Committee on Apprenticeship, and shall become a part of this agreement.

In witness whereof the parties hereunto set their hands and seals:

\_\_\_\_\_  
(Apprentice) (SEAL) \_\_\_\_\_ (Employer) (SEAL)

\_\_\_\_\_  
(Address) \_\_\_\_\_ (City and State of the Firm) (SEAL)

\_\_\_\_\_  
(Parent or Guardian) (SEAL) \_\_\_\_\_ (Address)

Approved by the Joint Sheet Metal Apprenticeship Committee of Chicago and Vicinity \_\_\_\_\_

\_\_\_\_\_  
19\_\_\_\_

\_\_\_\_\_  
Registered with Federal Committee on Apprenticeship \_\_\_\_\_

\_\_\_\_\_  
19\_\_\_\_

\_\_\_\_\_  
Chief of Apprenticeship

tion of any of the clauses contained within these standards.

24. **Amendments to these Standards.** These standards may be amended at any time by a two-thirds vote by action of the Joint Apprenticeship Committee, subject to approval by the Contractors' Associations, the union, and the Federal Committee on Apprenticeship. Such amendments shall not alter apprenticeship agreements in effect at the time of such change without the express consent of all parties to such agreement.

25. **Duties of Consultants.** Consultants to the Joint Sheet Metal Apprenticeship Committee should attend meetings upon request of the committee on all problems affecting the agencies they represent, and render such assistance as will aid in improving the trade preparation of the sheet metal apprentices.

26. **Relationship of Standards to Bargaining Agreement.** Nothing in these standards shall be interpreted as being contrary to the present or subsequent bargaining agreement.

27. **Expenses incurred in Administration of These Standards.** Expenses incurred by the Joint Sheet Metal Apprenticeship Committee in carrying out the provisions of these standards will be borne equally by the Contractors' Associations and the Union.

# Apprenticeship for the Veteran

**T**HE end of the war has not provided any quick, easy solution to the manpower problem in the warm air heating-sheet metal contracting industry. Employment ceilings are off; employers who have been starved for help and who haven't depended on war contracts for a living are competing for labor; almost everyone wants to hire or rehire the veteran—"give him a break"—and incidentally solve his own labor problem. Furthermore, the conflicting statements on veteran seniority "status," etc., have only confused prospective employers, and the veteran, who can be the answer to the manpower problem, doesn't know where to turn. He wants a job, but not just any job; he wants a future and he is often willing to train for it, but he needs good wages right now to support himself and his family.

One of the best answers to the question of the returning veteran's future is apprentice training in a skilled trade under standards established jointly by industry and government. What apprenticeship offers the veteran is well known to industry but not so well known to the veteran, which is one reason why there has been so far no great rush of G. I. apprentices.

## Qualified Vets Receive Subsistence

The veteran who qualifies for apprenticeship can receive a monthly subsistence allowance paid by the government under the G. I. Bill of Rights (Public Law 346) if he was not over 25 when he entered service. If he was over 25 he may still receive the subsistence allowance if he can prove that his apprenticeship training was interrupted by his entrance into military service. The allowance is \$50 a month if the veteran is single and \$75 if he has dependents.

Under Public Law 16, the Veterans Administration has the responsibility of securing training for the veteran who has a service-connected disability *plus* a vocational handicap. It should be pointed out that the veteran may have both of these and not be mentally or physically disqualified for apprentice training. He may be the victim of nothing worse than a punctured eardrum which, if service incurred, may make him eligible for a pension and for vocational assistance from the Veterans Administration. If eligible, whatever his disability, he can receive from the government a maximum of \$92 a month while he is in training if single, and if he is married, \$103.50 per month and \$5.75 additional for each child. The monthly payment a veteran receives includes his regular pension and a training allowance.

Under both laws, the government payments are in *addition* to the veteran's wages as an apprentice. The Veteran's Administration has ruled only that a veteran's combined income from his employer and the government may not exceed the journeyman rate in the job for which he is being trained. However, in the case of a veteran who is receiving a disability

pension, this basic pension will not be reduced because of the veteran's earnings. It is only the increased allowance that he receives while in training that can be reduced, and then only if it would bring his income above that of a journeyman in the trade.

The apprenticeship program offers the veteran not only the opportunity to learn a skilled trade that will help to insure his future, but also a greater financial return and more security during the early postwar years than he may find elsewhere. With the government subsidy, it will be possible for veterans with dependents to enter apprenticeship and still support their families. Former apprentices who might not otherwise consider finishing their training may find it worthwhile to return to their old jobs. All this is a very hopeful prospect both for the veteran—who needs a skill to compete in the postwar world—and for industry, which needs apprentices and journeymen.

## The Chicago Plan

In many cases apprenticeship programs have been modified to provide for the veteran, in the light of his greater maturity in years and experience. For example, there are the recommendations of the subcommittee on G. I. Apprentices approved by the Joint Sheet Metal Apprenticeship Committee of Chicago and Vicinity, which cover the following four differences from the standard apprenticeship procedure:

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For the fourth quarter of 1945, the estimated over-all volume of construction is expected to amount to \$1,167,000,000, almost 10 per cent more than the volume expected, had the war continued. Privately-financed construction is expected to make up \$785,000,000 of the total fourth quarter volume.

The largest volume of private work is expected in factory building, which will amount to an estimated \$206,000,000 of put-in-place construction. This figure represents almost three times the volume of private factory construction in the fourth quarter of 1944 and is well above the average quarterly rate of \$169,000,000 for this type of construction in 1941.

The upward trend of privately-financed factory construction is expected to continue at an accelerated rate in 1946, as reconversion activity speeds up. An estimated \$950,000,000 will be spent for this type of construction, the highest annual rate to date.

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Arnold Kruckman's

## Washington Letter

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### Undercurrents in Labor-Management Conference

THE MOTIVES which are giving direction to the currents *under the surface* of the Labor-Management Conference in the Capital provoke far more speculation than the phenomena you can see on the surface. On the very day the Conference began, the 4,000 operators of streetcars and busses in the Capital went on strike with practically no warning. When people started to work in the morning there was no conventional transportation except desperately over-worked taxis. Their strikers quit against the simple clear terms of their own contract, and in opposition to the urgent counsel of their local AFL heads as well as the national head of their union. They suddenly demanded an increase which would have cost the utility (a rigidly regulated service in the Capital) almost \$4,000,000 more annually, and which demonstrably would have put the utility more than \$2,000,000 annually in the red. The strike was led by men who had never been very conspicuous in the union. It was illogical, inexplicable on any basis of common sense, and the proceeding defied all normal AFL consistency. For over 36 hours the suddenly and mysteriously created leaders declined all suggestions for arbitration or negotiation.

#### Why the Transit Strike?

The situation riveted attention on the Labor-Management Conference, it caused a sudden upboiling of bitter criticism of unions in Congress and elsewhere, it created a demand for sweeping legislation to outlaw strikes, to put the brakes on almost all forms of orderly business between unions and industry, and it gave more momentum to the hammering to which Truman and his Cabinet associates have recently been subjected. The timing of the strike, its violation of the most elemental decencies between men, the lack of primary common sense in the demands, the whole kit and kaboodle of the demonstration was too perfect. Everywhere, in all grades, the question was: Why? It did not make sense to the most superficial observer.

The question mark became so insistent in Washington, that it overshadowed the anger over the annoyance and discomfort. Everywhere people began to dig up references to the other strikes which occurred recently in Detroit and elsewhere when a small group of sudden leaders swept the constituted leaders aside and rushed isolated unions into quickie strikes. The *why* in Washington steadily grew into an insistent W H Y.

This curiosity became so overwhelming that it seems to have upset appercarts. The effect of the growing interrogation appears to have registered somewhere. The quickie leaders abruptly permitted the strike to collapse just as suddenly as it had boiled up. The leadership went back to elected officers. But that question, WHY? has not yet been downed in Washington. Rightly or wrongly, the majority of people in Washington think there was no real rank and file sentiment for the strike; they think the impulse to strike might eventually be found outside of Washington, if the FBI or a similar agency makes enquiry. They even wonder what kind of "labor" supplied the deep down momentum for the strike.

#### Questions Breed Questions

These questions have inevitably bred a flock of other questions. The Labor-Management Conference obviously is critically important to the nation. The effort to find a permanent method of negotiating and settling labor-management disputes clearly is the correct approach to the current problem. Yet, for weeks, while the Conference was in process of organization, there has been a consistent tendency to play it down, to question its usefulness, to label it highbrow, to attribute it to politics.

The average person away from the Capital probably has thought of it as just another one of those futile things they do in Washington. Others, better informed, have gloomed that it could not amount to anything because the cards are stacked. Still others cannot conceive how Labor and Management could ever really get together. The optimist has been so rare and his hopeful voice so neutralized that practically no one has been able to hear him. Observers here know the Conference has been very soundly and solidly organized; we know it has been planned to avoid a maximum of conflict, and to secure an optimum of agreement. If those who are part of the Conference really wish to get results, Schwellenbach and his associates have striven with all their might and main to provide the opportunity. But there is little ground for the impression that some of the management group have gone into the Conference with anything but suspicion; and some of the labor group obviously have come in with the dare to knock the chip off the shoulder. The feeling apparently is more acute than it has been since pre-war days. The ques-

tion you hear here is the speculation about how much of this strained ill-will has been fomented. And WHY?

And there is the explanation, which is not an explanation, that the strikes certified to the Government under the Smith-Connally Act, over 7,000 since August 15—and still increasing—largely stem from the discontent of returned veterans. There are strike pictures showing the veterans marching, wearing uniforms, and carrying placards, the placards announcing where they fought. Some labor people claim these veterans are the quickie leaders who start strikes against the counsel and judgment of seasoned labor officials; that they are impelled to foment strikes because they resent any leadership after four years of compulsory submission in the Army and the Navy. The word is that the veterans have no grudge against unions, but have a grudge against those who made strikes during the war years.

And there are union people who will tell you that the veterans in the Pacific area are indifferent to unions, and indifferent to veterans superseniority because they did not work, were too young to hold regular jobs, before they went into the Services. Off the record, they tell you here in Selective Service and in other parts of the Service organization, to take this gossip with a very large grain of salt. Particularly the Selective Service and Army people seem to be absolutely convinced there is little truth in the yarn that the veterans are chiefly responsible for uncontrolled strikes. There appears to be some thought in the Selective Service minds that some of the uniforms in the pictures published may not have been worn by strikers who are veterans. Again the question here is WHY? Why the misrepresentation, and the cover-up?

### **Wallace Out of Step**

As the Conference unfolds it will become clearer that Secretary of Commerce Wallace is not exactly in step with the Administration. Wallace, incidentally, was the only official or delegate, on the first day of the Conference, who carefully sent a complete copy of his opening address to every correspondent in the Capital. He apparently wished to make sure the country clearly understands he is in sympathy with the wage-price adjustment program, and that he is in step with the CIO program of higher wages, more production, more consumption, lower unit profits, and more gross profits. It is no secret here that Wallace is impatient with the Truman Administration, and that Wallace may resign as Secretary of Commerce. This would give him freedom to launch the criticism which now is possible only in camera or by indirection.

The Capital thinks the Administration would be politically embarrassed, and its political future might be jeopardized, by the defection of Wallace. Wallace is far more astute in some phases of politics than Truman and his immediate official family. Wallace also leans far more to the left than Truman or any of his group; and it is expected, as the Conference develops, it will become clearer that Wallace will support most of the program that may be proposed by CIO's Murray and Hillman. Apparently Wallace, as well as Murray and Hillman, have taken it upon themselves to needle the Administration whenever the opportunity offers. It is this group which is expected in some way, despite channelling committees, to fight vociferously, even if unsuccessfully, to bring the wage and price problems before the Conference. There seems small doubt that John L. Lewis has formed a solid block in the Conference with AFL and the Railroad

Brotherhoods, and that this voting majority in the Conference, as well as overwhelming numerical majority as unionists, have pocketed the CIO group and isolated them as a very vocal, but impotent, part of the Conference.

Why does John L. Lewis throw in his lot with the AFL? It is natural. They tell you here that Philip Murray hates Sidney Hillman and that both hate John L. Lewis, and that John L. Lewis regards them as renegades in politics and in the labor cause. They tell you, moreover, that Bill Green is getting ready for retirement, and that John L. Lewis is often discussed as his possible successor, as head of AFL, if Lewis takes the UMW back into AFL. Whether he will or whether he will not, no one seems to know except Lewis. He has not yet made clear his decision. The developments that unfold at the Conference may tell more clearly what will happen. At any rate, the gossip about the personal alignments and predilections of the leaders of labor is important. The emotions of powerful men have an extraordinary influence upon the lives of other men. There are many Why questions in the relations of the individuals in the Conference.

### **Lewis Really Leads**

There is no doubt John L. Lewis will be the most colorful, if not the most powerful, individual in the Conference. He is one of the few men in the Unions today who leads. Many other leaders go back to get instructions from their organizations. Lewis tells his organization what they must do. Lewis Schwellenbach is very candid in telling the world he thinks a union leader must lead, must set the pace for his following. Schwellenbach, another conspicuous figure of the Conference, leads, but his technique is utterly different from Lewis's. Schwellenbach is gentle, candid, cautious, stubborn, friendly, utterly courageous, not high-brow nor in the least shoddy. And he is orderly, logical, and warmly human. Often those who make hasty characterizations call him judicial; but that is too cold and indifferently aloof for Lew Schwellenbach's temperament. He has a mind that is interested in people and in affairs and things, and he has the writer's tendency to look at all sides of a problem and feel all emotions of those involved in an incident.

### **Schwellenbach Calls the Turn**

There is nothing tough in Schwellenbach, but it would be a mistake to think anything could be put over on him. His mind is too clear, and balanced, and fair. He is a good politician, and he is loyal and faithful. After he got back from the first World War he was one of the first men the American Legionnaires in the State of Washington elected as their State Commander; and as State Commander he had to handle the nasty business of the I. W. W., and won golden opinions from his peers for the skillful manner in which he disposed of the Wobblies. Not long ago he told friends, "I took this job of Labor Secretary because Harry Truman asked me. I think a lot of him. We were freshmen together in the Senate. When I came I regretted the calm ease of the Federal Judgeship I was leaving. Sometimes it was too easy. I missed the arguments they give anybody but a Judge. One thing I do know about this job: it will be the most unpopular job in the country for the next two or three years." He said this before the moans and wails began to rise about the strikes and the Con-

*(Continued on page 200)*

# Postwar Sales Facts

By Arthur Roberts

**A** GOAL of \$140 billions national income is being talked about as essential to the employment of 65 millions in the postwar period. This means a retail sales volume of \$75 billions annually. In 1939, retail sales were \$42 billions. Thus the postwar years must increase on national sales 80 per cent to maintain maximum employment and keep free enterprise in the saddle. The warm air heating dealer and sheet metal contractor can't pass this buck to George. It's a retail job primarily, and all merchandisers, large and small, must do their share of our postwar goals won't be achieved.

Comparing 1939 figures with postwar goals, you can visualize the sales increase needed in your own business. If your sales volume was \$50,000 in 1939, you should do 80 per cent more in each postwar year, or \$90,000 annually. This calculation may create incredulity, but merchandisers cannot pass this increase to anybody else, each one must do his share, whether he sells confectionery or warm air heating. These figures are based on Department of Commerce statistics and postwar projections of the Committee for Economic Development.

If you, and you, and you, do not chip in to do your share, the postwar goal of \$75 billions retail volume won't be reached, because you are on the firing line, contacting the consumer. Retail outlets all-told number 1,770,335, more than half the business units in the United States. These retail outlets range from the United States Steel Corporation to the little tourist camp. Most important, if \$75 billions annually in retail sales, including the offerings of this industry, are not forthcoming in the postwar period, 65 million employment will go by the boards and bureaucracy will more than likely take over. There is the picture in a thimble.

## Small Business Counts

Much depends upon the small businessman to attain these postwar goals and national prosperity. Too often, the small businessman assumes that his donation to our economy is negligible, so it doesn't matter much whether he extends himself or not, but, in the aggregate, he has always accounted for a major portion of our national income, consequently, that 80 per cent increase in retail sales is as much his problem child as it is the problem of big business.

Now, what plans are you making to increase your volume 80 per cent in the postwar period? Unless you begin now to set up postwar quotas on the estimated national increase and unless you start thinking about how you will achieve this goal and what effect it may have on your operating ratios, you will find yourself floundering around helplessly in postwar mire. This poses the big problem of the postwar period and demands action and deliberation

now.

In general, there are 4 ways by which the warm air dealer and sheet metal contractor can plan for that 80 per cent increase in sales volume:

1. Increase dollar volume by increasing prices in the postwar period.
2. Increase dollar volume with expanded facilities.
3. Increase dollar volume on the same lines now carried by increasing the unit sale and other promotional routine.
4. Increase dollar volume by adding new lines.

## Merchandising Key to Volume

The first method is not so good. It savors of inflation and that's bad. Moreover, the government is against it and will take steps to prevent inflation if it rears its ugly head. If the postwar goal of \$75 billions retail sales is begotten by inflation, sooner or later the postwar trend may be in the opposite direction, at least so say some economists and government planners. But that is beyond the scope of this article. However, we all know that the prewar business philosophy was, "Higher prices mean more employment, more everything else." Propagators of lower prices within the government and without, contend that the postwar business credo should be, "Lower prices mean more buyers for more goods, more employment, more prosperity for all." We do not take sides here, merely give you the scope of economic thought today so that you can keep your perspective in the right groove. But we do venture that an increase in business won't be achieved by big price increases in the postwar period. The increased volume must be born of better merchandising and sales promotion.

Expansion is on the postwar agenda for many merchants but it will be more modest than 80 per cent of present capacity for warm air heating dealers and sheet metal contractors. Hence, our industry's postwar increase in sales volume, to a large extent, must be achieved by increasing dollar volume on the lines now carried or by adding new lines. This will require a much better job of sales promotion than the average member of this industry has ever staged before.

## Add Profitable New Lines

The addition of new lines has tremendous possibilities in the warm air heating and sheet metal contracting fields, providing the merchandiser keeps adequate cost records to make sure that each line is profitable. The postwar period will bring many new lines to our market, and old lines will be improved in one way or another. Some of the products promised for the postwar period may be dream stuff, but it isn't unreasonable to assume that the war has

brought improvements to production that will drift into postwar markets and create additional sales volume for aggressive merchandisers.

This increase in business is not only a matter of more profit, it has tremendous social implications. If you increase your business, you can employ more people directly and indirectly and do your bit in achieving national prosperity. Big manufacturers employ many on production, but unless this production is sold, production stops and out of work go the Kellys and Smiths. So the retailer is the key man to full employment. He must sell production and service to the consumer at a pace fast enough to keep 65 millions on the job. On him rests the tremendous burden of keeping unrest at minimum and free enterprise as our way of life. Yes, there is more than the profit angle to that 80 per cent increase in postwar sales. That's why it is almost as important to reach that quota as it is to hit tops in a war bond drive.

#### **Tax "Take" Must Be High**

Taxation comes into the picture, too. The country, heavily in debt, will never get out of debt unless national income is kept high so that the tax "take" will also be high. Low wages, low sales mean low tax revenue and more deficit. On the other hand, the demand for lower taxation will get some response from Congress, which is, at this writing, working on legislation to improve the cash position of business and industry during the reconversion period.

#### **Clamor for Lower Taxes**

One measure raises the exemption under the excess profits tax from \$10,000 to \$25,000. It is expected that this will relieve industry of payments estimated at \$5 billions in the reconversion period when they will need the money to put production on a peacetime basis. Newspapers are clamoring for a reduction in individual taxes, contending that the reconversion period will hit individuals hard too; that the individuals are paying heavy taxes; that wartime wages cannot be expected to continue, so relief is necessary, either through an increase in exemptions or lower basic or surtax rates.

When tax rates are reduced, volume and profit

must be kept higher than in wartime, so it follows that the government will encourage the attainment of a national income of \$140 billions in the postwar period, removing impediments to this objective in order to get adequate tax revenue to cancel the \$300 billions deficit and pay postwar government expenses.

In short, labor, influential businessmen, economists, the tax department and Washington officials, have fixed on \$140 billions national income, which would require 80 per cent more retail sales than in 1939 and it is up to free enterprise to fill the order. Many government agencies are folding up and there is a definite trend toward free enterprise. Those in high places want to give free enterprise an opportunity to bring order out of chaos. If it makes the grade sans apple vendors and WPA's, there will be no planned economy. If free enterprise fails in the postwar period, the pendulum will swing back to the government planners, and that's just how important it is to you, Mr. Dealer and Mr. Contractor, to do your utmost to get your share of that 80 per cent increase in retail sales in the postwar period.

#### **Write Your Own Ticket**

You must write your own ticket on how to obtain that 80 per cent increase, whether through expansion, better sales promotion of lines now carried to "up" volume or the addition of new lines. We offer the foregoing merely to emphasize the mammoth advertising and selling job you must do in the postwar period. Your quota as an individual merchandiser is easily computable. Just take your volume in 1939 and add 80 per cent, then size up your present facilities and try to figure out how you will hit the mark, whether you will need more space to do the job, more personnel, more equipment, whether you can hit the jackpot with the same facilities and a greater variety of salables or can carry the ball to the goal with present lines plus an improved brand of sales promotion.

Your analysis should include an appraisal of prewar costs and war costs, as a basis for an estimate of postwar costs, so that you can arrive at some idea of the net profit resulting from postwar operations.

## *Help! Help!*

A committee of the Sheet Metal Contractors National Ass'n has begun work on a cost accounting-estimating manual and system. Months will be required to complete the work. The first thing wanted is copies of time cards used by contractors. Will you please send to this publication two copies of your shop or job time cards and attach a note explaining why this card is especially good. Please send these immediately.

# Partnership or Corporation\*

## [The Tax Comparison—Part 2]

ANY study of the relative tax advantages of corporations and partnerships must start with the two fundamental differences in their treatment.

First, corporations aren't taxed at the same rates as an individual. A corporation is subject to a normal tax and surtax ranging from 25 to 40 percent, plus an excess profits tax of 95 percent. In addition, it is subject to the capital stock and declared value excess profits taxes. On the other hand, an individual is subject to a normal tax and surtax ranging from a low of 23 percent to a high of 94 percent.

Second, a partnership is considered to be inseparable from its partners. If a partnership has a profit, the partners are treated as having earned their proportionate share of that profit. If the partnership loses money, the partners are likewise considered to have sustained their share of the loss. A corporation, on the other hand, is a person completely separate from its stockholders. Even though the stockholder is the complete owner of the corporation, he is not immediately affected by the corporate profits or losses. If the corporation has a profit, the stockholder does not have to include any portion of the profit in his personal tax return. It is only when the corporation pays out some of its profits that the stockholders are affected taxwise.

The double taxation of corporate income, the differences in treatment of partners and working stockholders for payroll tax and salary stabilization purposes, the taxation of corporate tax-exempt income, etc., are direct outgrowths of this second fundamental difference.

In weighing the relative tax benefits to be obtained from the corporate and partnership forms, post-war tax developments must be considered. The *probables* include (a) elimination of the corporate excess profits tax with the end of hostilities or shortly thereafter, (b) some reduction in corporate normal and surtax rates, and (c) only slight reduction in individual tax rates—but with the income tax ceiling cut from 90 percent to 65 or 75 percent. The strongest *possibility* is the elimination of the double tax on corporate profits. Many proposals along this line have been made, but no generally acceptable solution to the many problems involved has yet been reached.

### Individual and Corporate Rates

In 1939, the corporation tax of 12½ percent to 19 percent was a higher tax for many small businessmen than the personal tax rates, which started with 4 percent on the first \$4,000 of income, and 8 percent on the next \$4,000 of income. It required a net income of almost \$50,000 before the tax paid as an individual would exceed that paid as a corporation. It was therefore usually *not* advisable taxwise for a

small business to operate as a corporation.

Since 1939, however, the increase in tax rates (excluding the excess profits tax) has fallen much more heavily on individuals than on corporations. True, corporate rates have doubled, but lower bracket individuals have had their rates increased almost 600 percent (from 4 percent to 23 percent). As a result of this increase, a corporation whose excess profits tax credit plus specific exemption is sufficient to prevent the imposition of an excess profits tax now pays less tax than an individual (except for the first \$2,000 of income, in which bracket there is a 2 percent differential in favor of the individual). Changes in tax rates during the past several years have in many cases reversed the odds in favor of the corporation.

Where a corporation is not subject to excess profits tax, the present savings in federal income taxes by a corporate business as compared with an unincorporated business are evidenced by Table 1.

Before studying the table, note that this comparison of tax rates does *not* take into consideration the very important factor of dividend payment and excess profits tax. It does, however, indicate the difference in the basic tax structure. If you have no excess profits tax worries, and don't expect to pay any dividends, a quick glance will show you the advantages of corporations. If you have an excess profits tax or pay substantial dividends, you can't stop at this point. But even where you have these complications, the chart is useful for two reasons:

1. The excess profits tax is not a permanent tax fixture. Its repeal will undoubtedly follow the war.
2. Dividends may not remain high in the post-war period. In addition, dividend payments are a controllable factor.

### Double Tax

Comparison of the tax burden on corporate and non-corporate business has little meaning without a consideration of the tax effect of distributing the profits to the owners. When dividends are paid out of profits, the corporation is not entitled to any deduction for tax purposes. At the same time, the stockholder must report the entire amount as taxable income. Thus, from a tax viewpoint, the payment of dividends is a total loss. It results in additional tax on the individual stockholder with no saving to the corporation. Saying this another way, it results in a double taxation of corporate profits. If a corporation earns \$100, it must pay a corporation tax of \$25. If it then distributes the remaining \$75 as a dividend to a stockholder who is in the 50% bracket, the stockholder would have to pay a tax of \$37.50. Net effect: a total tax of 62½% on the \$100 of corporate income.

Of course, if no dividends are distributed there is no double tax. If only part of the corporate income is distributed, there is a double tax on only the portion paid out as a dividend. It is therefore apparent that a careful forecast of probable dividend policy should be a first step in evaluating the relative tax advan-

\*Reprinted from a report of the same title prepared by Research Institute of America.

**TABLE 1**  
**Saving in Income Taxes by Operating as Corporation**

(Under 1944 rates, assuming no excess profits tax and no dividend payments)

<i>Surtax Net Income</i>	<i>Tax as Individual</i>	<i>Tax as Corporation</i>	<i>Saving as Corporation</i>
\$ 2,000.....	\$ 460	\$ 500	\$ -40
4,000.....	960	1,000	-40
6,000.....	1,540	1,520	20
8,000.....	2,200	2,060	140
10,000.....	2,940	2,600	340
12,000.....	3,760	3,140	620
14,000.....	4,680	3,680	1,000
16,000.....	5,680	4,220	1,460
18,000.....	6,740	4,760	1,980
20,000.....	7,860	5,300	2,560
22,000.....	9,040	5,880	3,160
26,000.....	11,520	7,280	4,240
32,000.....	15,420	10,460	4,960
38,000.....	19,500	13,640	5,860
44,000.....	23,820	16,820	7,000
50,000.....	28,320	20,000	8,320
60,000.....	36,120	24,000	12,120
70,000.....	44,220	28,000	16,220
80,000.....	52,620	32,000	20,620
90,000.....	61,320	36,000	25,320
100,000.....	70,320	40,000	30,320
150,000.....	116,320	60,000	56,320
200,000.....	162,820	80,000	82,820

*tages of the corporation and noncorporate form of doing business.*

The tax results of different dividend payments can be seen from the following example.

Corporation A earns \$50,000 a year and its credit is sufficiently high so that it escapes excess profits tax. The sole stockholder has no income other than a salary from the corporation of \$15,000. He is married and has two children. Assuming the corporation pays (1) no dividend, (2) a dividend of \$15,000, and (3) a dividend of \$30,000, the tax burden under 1944 rates would be as follows:

	<i>No dividend</i>	<i>\$15,000 dividend</i>	<i>\$30,000 dividend</i>
Corporate tax (40% of \$50,000) .....	\$20,000	\$20,000	\$20,000
Stockholder's tax on dividend received .....	None	8,505	18,750
Total tax .....	\$20,000	\$28,505	\$38,750

Under current tax rates, where *all* corporate income is to be paid out as dividends, the corporate form will almost invariably be a prohibitive method of operating business. As can be seen from the above example, the stockholder had only \$11,500 left out of an original corporate income of \$50,000. If he had operated as an individual, he would have retained \$15,845 out of the \$50,000.

#### **Penalizing Accumulated Earnings**

Since the double taxation feature of corporations arises only when dividends are paid, most closely held corporations could easily prevent this double taxation by not paying dividends. Realistically, it is usually of little consequence to the stockholders whether the

cash remains in the corporation or is transferred to their personal bank accounts. However, the law recognizes this possibility. It imposes a special penalty on corporations which permit earnings and profits to accumulate so that the individual stockholders may avoid tax. The penalty of 27½ per cent of the first \$100,000 of specially defined undistributed income and 38½ per cent of the amount in excess of \$100,000. In general, the tax is based on the income subject to normal tax, reduced by the dividends paid and the federal income tax.

The practical problem for most small corporations narrows down to what is the least amount of dividends which can be declared without running afoul of this penalty. There is no rule of thumb, but here are some general guides: No dividends need be declared so long as the funds accumulated are for the reasonable current and future needs of the business. While it's not always easy to determine what are the reasonable needs of a particular business, it will help to remember that it is only where the business begins to use its funds in a manner inconsistent with normal business practice that the danger of the penalty arises. Thus, if the funds are invested in securities of outside unrelated businesses, if substantial advances are made to stockholders, or if more cash is accumulated than the amount that ordinary business prudence would require, the corporation may well be accused of accumulating earnings purely to save the stockholders from the payment of tax.

#### **Legitimate Accumulation of Earnings**

Earnings can be safely accumulated for a variety of business reasons. For instance:

1. To finance additional business.
2. As a reserve to compensate for inventory losses.
3. To procure additional real property for use in the business.
4. To liquidate mortgages or other long-term indebtednesses.
5. To acquire additional machinery and equipment.
6. To replace antiquated equipment.
7. To pay dismissal wages to employees.
8. To develop new processes, products or markets.

Note that the accumulation must be based on a more concrete basis than a mere hope for future expansion. There must be some definite proof that the expansion is seriously intended. A nebulous hope of expansion in the indefinite future will not be sufficient to justify accumulations.

Where the taxpayer is not a holding company but is engaged in an active business which has obvious business hazards, the courts hesitate to substitute their judgment for that of the directors as to the reasonableness of corporate accumulations. This doesn't mean that if you are engaged in the active conduct of a business, you may safely ignore the penalty surtax. It merely means that the courts will take a liberal view towards the amount of earnings which you may safely retain.

The penalty tax is *not* imposed on corporate surpluses. It is imposed solely on the current year's income which is considered to be accumulated in order to save the stockholders from paying a tax. However, if the corporation has, over a period of years, accumulated a considerable amount of earnings, the earnings for the past years may be a factor in showing that the *current* year's earnings have been unreasonably accumulated.

A good test for almost every corporation to apply

is: Would the earnings be accumulated had there been no individual tax to escape? A conservative application of this test will usually steer a company safely past the surtax.

### **Treasury's Attitude**

Revenue agents have had long-standing instructions to be on the lookout for the following:

1. Corporations which have not distributed at least 70 per cent of their earnings in taxable dividends.

2. Corporations which have invested earnings in securities or other properties unrelated to their normal business activities.

3. Corporations which have advanced sums to officers or shareholders in the form of loans out of undistributed profits or surplus from which taxable dividends might have been declared.

4. Corporations the majority of whose stock is held by a family group or other small group of individuals or by a trust or trusts for the benefit of such groups.

5. Corporations whose distributions appear to be inadequate—even though they exceed 70 per cent of the corporation's earnings—considering the nature of the business or the financial condition of the corporation; or such corporations with accumulations of cash or other quick assets which appear to be beyond the reasonable needs of the business.

The fact that the instructions single out corporations which have distributed less than 70 per cent of their earnings as taxable dividends should not be taken to mean that 70 per cent must be distributed, or that you are perfectly safe if you distribute 70 per cent of your earnings. This percentage is not stated in the law. It is intended as a criterion for examination purposes only, and is not necessarily a standard for determining the "reasonableness" of an accumulation or the applicability of the punitive surtax.

### **Future Attitude on Earnings**

Faced with the uncertainties and challenges of post-war period, a policy of accumulating earnings would appear to be reasonable in the case of almost any operating corporation. As a matter of fact, an industrial cushion of accumulated earnings might be desired by the government as a major safeguard against wholesale unemployment if a post-war slump sets in. It is quite possible that both the Treasury and the courts will recognize the business necessity for accumulating earnings during the war period and possibly for a few years thereafter. Obviously, this will not result in a blanket exemption from the tax on unreasonable accumulations to all corporations, but rather a liberal interpretation of "reasonable" accumulation in the light of present conditions.

### **Accumulations by New Corporations**

Recently organized corporations which will take several years to reach their stable level have little to fear from the tax on unreasonable accumulation of earnings. The law does not require any business to remain static. A corporation has the right to grow. Earnings which are plowed back into the business for this purpose will not be treated as accumulations to avoid tax on shareholders.

On the other hand, a new corporation which has been organized to take over an established unincorporated business is treated in the same manner as an existing corporation which has reached its normal level.

### **How Long Can Earnings Be Retained**

The accumulation of earnings without penalty today doesn't necessarily mean that a company is merely postponing the inevitable day when those earnings will have to be distributed as dividends. Most profits of a growing or expanding business are reinvested in corporate assets such as additional plants, equipment, inventory, working capital, etc., and become for all intents and purposes the equivalent of capital. The earnings become frozen in the business and may never be distributed. Furthermore, earnings of one year may merely build up a reserve to offset losses of poor years, and in that way may never be paid out as dividends. The final possibility is that the earnings may be distributed, not as fully taxable dividends, but when the corporation is dissolved, as capital gains subject to a maximum effective tax of 25 per cent.

### **Avoiding the Double Tax**

If a corporation's earnings are not withdrawn as dividends but are used to pay expenses to corporate stockholders, the income is transferred to the stockholders as effectively as if a dividend were paid, but only one tax is incurred—the tax on the individual. Obviously, a dividend can't be transformed into an expense merely by changing its name. But there are many payments to stockholders which represent valid business expenses to the corporation and which can be deducted. Probably the most common expense paid to a shareholder is compensation for services rendered by a stockholder who is employed by the corporation.

A stockholder who works for his own corporation has the same status as any other employee, even though he may be the sole owner of the corporation. Therefore, any payments made to stockholder-employees as wages or salaries are fully deductible in the same manner as payments to other employees. But here also the Treasury and the courts are fully aware of the tax avoidance made possible by disguising a dividend as an expense. All payments to stockholders, therefore, face a close scrutiny by the Treasury to make sure that they are not a cloak for dividend payments. "Salary" will not be disallowed merely because the employee is also a stockholder, but it will have to meet the test of being reasonable compensation for services actually rendered. And the test will be the more strictly applied since the employee is also a stockholder.

Even where the salary paid is reasonable, the amount cannot vary too much. If an attempt is made to increase or decrease the salary to correspond with business fluctuations, the corporation may face the accusation that the salary is really a dividend. Increasing profits may make possible an increase in the salary of the stockholder-employee, but rarely is a compensation allowed to keep pace with increasing profits. Conversely, when the corporation runs into loss years, the employee may have to continue to take a salary even though the corporate income is insufficient to cover the salary drawn. If that isn't done, there may be difficulties in increasing the salary again when business improves.

Salaries do not represent the sole expenses which may be paid to stockholders. Interest, rebates, commissions, royalties, etc., may be equally valid deductions despite the fact that stockholders are on the receiving end. However, the expenses must be in fact what they purport to be, and they must be "ordinary and necessary." The transaction between the stock-

*(Continued on page 188)*

AMERICAN ARTISAN

# RESIDENTIAL AIR CONDITIONING



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

# Waterbury

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CASING THAT COUNTS!

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For Your Customer, as a Lasting Source of Comfort—

because these are the things that we put *under the casing* in all Waterbury Furnaces:

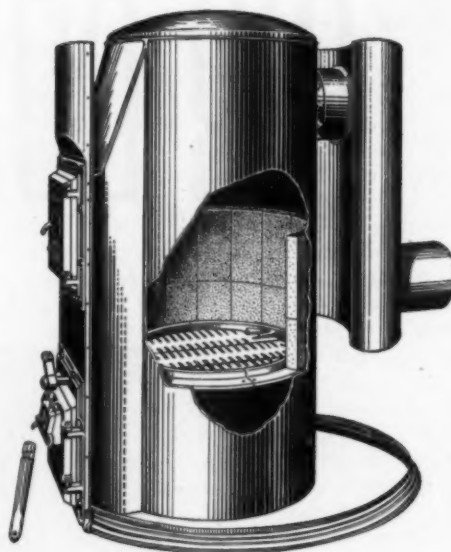
The body is made of *steel*, because no other material equals steel for durability.

This steel body is *welded* into one solid piece that absolutely and permanently keeps all dust, dirt and gases out of the air stream.

The fire travel is long, which means fuel economy . . . the heating surfaces are large, and that means heating efficiency.

Modern engineering coordinates these and other factors into an efficient heat-making machine, every sale of which helps to build good-will and growing volume for Waterbury dealers and jobbers.

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This is to be a year 'round program in the leading News, Shelter and Agricultural publications as well as the architectural and builders' magazines.

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Join now. Your contribution will prove a sound business insurance investment. Inquire of National Warm Air Heating and Air Conditioning Ass'n, 145 Public Square, Cleveland 14, Ohio.

## THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

# Research Residence Tests of a Conversion Gas Burner [Part I]

In view of the current interest in gas for home heating, it is believed the tests reported in these two papers are both timely and important. Note tests were made under gravity air circulation—results none-the-less show: capacities, register temperatures, distribution same with gas as with coal; efficiency at bonnet more constant with gas than with coal; overall house efficiency identical; gas burners need not show high flue temperatures if correctly installed. Part 2 will report cost of gas vs. coal.

**T**HIS report deals with tests conducted in the Research Residence and run largely for the purpose of comparing the performance characteristics of both house and furnace when the latter was fired with anthracite coal and with gas, and of determining the relative cost of operation with these two fuels under the same conditions. Some tests were run with gas alone in order to determine whether any saving in fuel could be effected by reducing the room air temperatures to 60 deg. F. at night instead of maintaining a temperature of 70 deg. F. at the breathing level during the 24 hours of the day.

All tests were run under gravity head using just one large, central cold air return face. With both fuels, the fire was controlled by means of a room thermostat located in the dining room and an auxiliary thermostat located in the bonnet of the furnace. The gas burner installation was as follows: The grate was removed and the burner installed in its place. The ashpit was lined with refractory insulation, the ashpit door was removed and the front of the ashpit, through which the burner entered, was sealed air tight with firebrick. Thin firebrick were placed in the radiator in a staggered arrangement to add to the turbulence and resistance of the gases flowing through the radiator. This burner was of the true surface combustion type, having a wide refractory hearth over the surface of which the air-gas mixture burned, the whole hearth becoming incandescent. Thus part of the heat was utilized as radiant heat. The burner operated on the on-and-off principle, and the gas valve was adjusted to supply approximately 6 cu. ft. per min. during the on periods. This was sufficient to maintain 70 deg. F. in the Residence during sub-zero weather. The air supply was adjusted until approximately 11 per cent  $\text{CO}_2$  was obtained in the flue gas, representing about 40 per cent excess air. These adjustments were not changed during the period of the tests.

## **Furnace Performance Characteristics**

The performance curves for the furnace, fired both with anthracite coal and with gas, are shown in Fig. 37, from which the results may be compared on the basis of a common heat input to the furnace. It should be noted that these curves represent the performance of the furnace with the gas burner operated on the on-and-off principle, with the on and off pe-

riods determined by the normal heat demand of the house, and that the efficiency is based on the heat output at the furnace bonnet. Both the register temperature and capacity curves for the two cases are nearly coincident over the lower range of heat inputs, representing mild and medium outdoor temperatures. An equivalent register air temperature of approximately 127 deg. F. was required in zero weather with operation on either gas or coal. At heat inputs above 80,000 B.t.u. per hr., representing severe weather, the capacity obtained with gas firing was somewhat greater than that obtained with coal.

The efficiency of the furnace when fired with gas was practically constant at 60 per cent over the whole range of heat inputs. On the other hand, when coal was used the efficiency decreased fairly uniformly from a value above 70 per cent to one of approximately 49 per cent when the combustion rate was increased from 0.8 to 3.8 lb. per sq. ft. per hr. At rates of heat input greater than 75,000 B.t.u. per hr. the efficiency with gas firing was higher than that with coal firing, but at rates less than 75,000 B.t.u. per hr. the reverse was true.

The curves for flue gas temperatures, shown in Fig. 38, indicate that at low heat inputs these temperatures were higher when gas was used than they were with coal, while at higher heat inputs, the temperatures obtained with gas were lower than those obtained with coal. This in itself is consistent with the condition shown by the efficiency curves in Fig. 37. However, the burner was off a larger percentage of the time at low heat inputs than at high, and during the off periods some air was drawn into the furnace through the small annular orifice at the fan inlet. The effect of this excess air would naturally be to reduce the flue gas temperature during the off periods and, since the curves represent the averages for both on and off periods over 24 hours, a greater reduction in the average would be expected at low heat inputs to the furnace, when the off periods were relatively long, than at high inputs, when the off periods were relatively short. The fact that the excess air at low heat inputs did not reduce the average flue gas temperatures for gas firing to a greater extent than shown in the curves of Fig. 38, thus bringing them below the curves for coal firing, might be indicative that the heat absorption in the case of gas firing was relatively poorer at the lower rates of firing than at the higher

ones, and that the increase in flue gas temperature due to poorer heat absorption more than offset the reduction due to excess air. This was probable, because when the burner was off for considerable periods, as it was at the low firing rates, the furnace castings cooled more than they would for the higher rates when the off periods were shorter. Furthermore, at low rates, the on periods were shorter than at higher rates, and the castings did not heat up as much. The net result would be that at the low firing rates the furnace operated with the castings at lower temperatures than at the higher rates, and the heat transfer from castings to air under these conditions would be less favorable than at the higher rates. Hence, the peak temperatures for the flue gas at the low firing rates, although actually lower than those at the higher rates, may have been relatively higher than they would have been under more favorable conditions of heat transfer, and both excess air and poorer heat transfer contributed to the lower efficiencies obtained with gas firing at the low rates of heat input. The flue gas temperatures obtained with gas firing were at no time excessive and the curves indicate that high flue gas temperatures are not necessarily an accompanying attribute of a conversion gas burner.

The fact that the heat output required for zero weather, as noted on the curves in Fig. 37, was approximately the same, whether the furnace was operated with gas or with coal, indicates that the over-all house efficiency was the same for the two cases. In the case of anthracite coal, this efficiency was found to range from about 90 to 97 per cent.

Figure 39 indicates that when the furnace was fired with gas the characteristic distribution of the air temperatures at the entrance to the warm-air pipes around the bonnet was not changed from that obtained with coal firing. The numerical values for the temperatures at the corresponding warm-air pipes for the same indoor-outdoor temperature difference also agreed very closely in the two cases.

The following conclusions may be drawn from the data presented:

- (1) For given heat inputs the operating character-

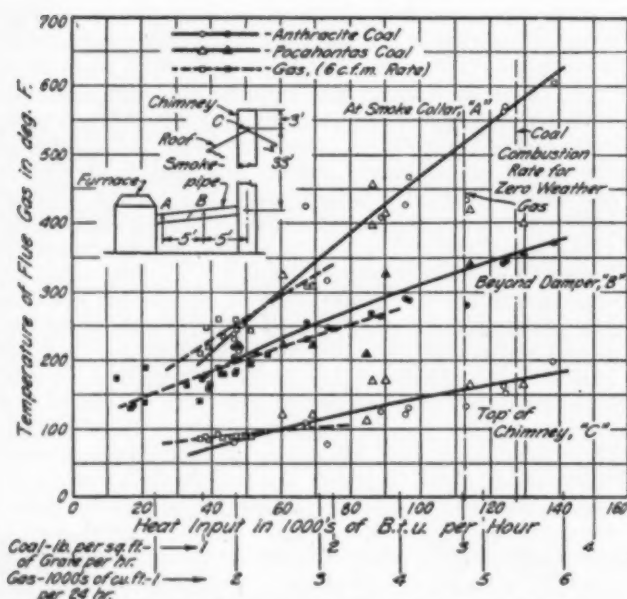


FIG. 38. FLUE GAS TEMPERATURE CURVES FOR COAL AND GAS FIRING IN NINTH INSTALLATION

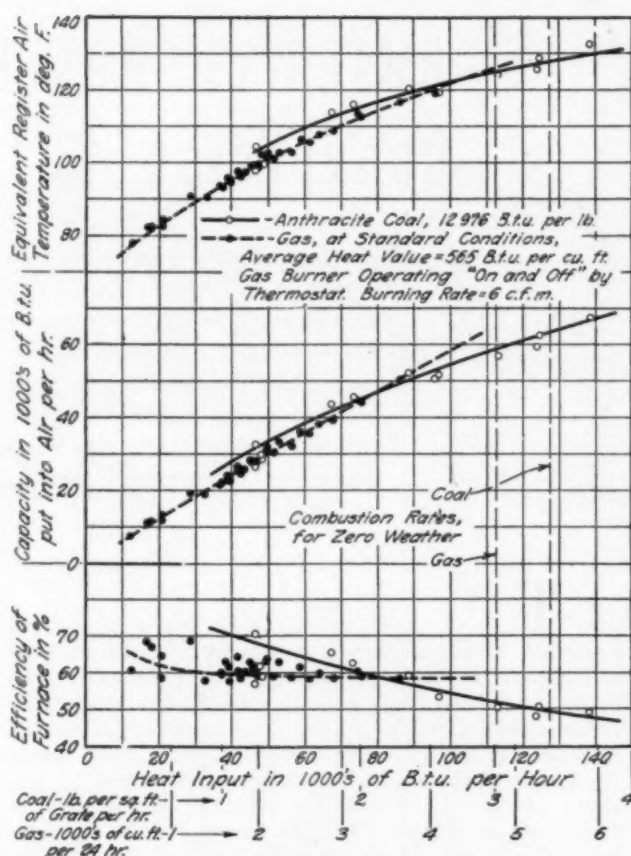


FIG. 37. PERFORMANCE CURVES FOR COAL AND GAS FIRING IN NINTH INSTALLATION

istics, or capacities, register air temperatures, and distribution of air temperature at the furnace bonnet are not essentially different for the same furnace installed in a given plant, whether the furnace is fired with coal or with gas used in a conversion burner.

(2) The efficiency based on the heat delivered at the bonnet is constant over a wider range of heat inputs when the same furnace is fired with gas under the conditions of these tests than when it is fired with anthracite coal.

(3) The over-all house efficiency is practically the same when the same furnace is installed in a given plant and operated either with a gas conversion burner of the type used or with anthracite coal.

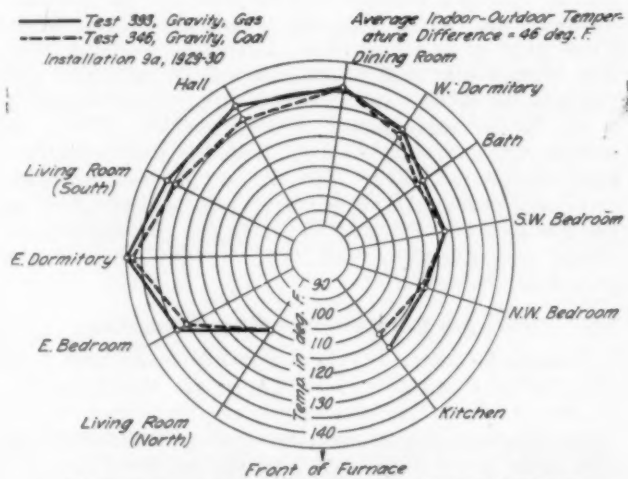


FIG. 39. TEMPERATURE DISTRIBUTION FOR AIR IN FURNACE BONNET FOR COAL AND GAS FIRING IN NINTH INSTALLATION

(4) High flue gas temperatures and resulting low efficiencies are not necessarily characteristic of a conversion gas burner.

#### Reduced Temperatures at Night

The gas consumption required to heat the house at various indoor-outdoor temperature differences with the room air temperature reduced to 60 deg. F. at night, as compared with that required when a uniform temperature of 70 deg. F. at the breathing level was maintained for 24 hours, is shown in Fig. 44. These curves are shown for two wind velocities, in each case, the full line representing continuous operation with room air temperature at 70 deg. F. and the dotted line operation with the room air temperature reduced at night.

The curves indicate that by reducing the room air temperature to 60 deg. F. at night, a decrease in gas consumption of approximately 4 to 8 per cent was effected. The percentage saving was greater for mild weather than for severe winter weather since the flue losses during the shorter warming-up period were proportionately less. These percentages of saving are dependent on the furnace installation and house construction, since such factors as the rate of cooling of the house, the heat capacity of the furnace, the rate of warming-up of the house, air infiltration, etc., have a direct influence on the fuel requirements.

The heat capacity of the furnace as fired by gas in this installation was less than it would have been if the same furnace had been fired with coal, since the incandescent coal in the fuel bed would have acted as a heat storage even with closed dampers. Hence, cooling occurred more rapidly than would have been the case with coal. Furthermore, with coal firing the combustion rate is determined by the available draft and the frictional resistance of the fuel bed, while the gas burner operated at a fixed combustion rate, which limited the rate at which heat was supplied and thus lengthened the warming-up period. Such differences in heat capacity and burning characteristics might make necessary some modification of conclusions drawn from the operation of a furnace fired with gas before strict application of these conclusions could be made to the case of a coal-fired furnace. The latter would tend to cool slowly due to the reserve heat stored in the fuel bed. The warming-up period would probably be shorter, depending on the available draft, and would be accompanied by high flue gas temperatures. Hence the possible economy in fuel consumption effected by reducing the house temperature to 60 deg. F. at night would probably be less with coal than with gas as a fuel. However, other factors might make it advisable to bank the coal fire at night and maintain a reduced rate of combustion in the furnace in order to prevent all of the fuel from burning out before morning.

While the question of fuel economy is a matter of some importance in comparing the two methods of house operation, the relative degree of comfort arising from these methods is of sufficient importance to receive serious consideration. In this respect certain undesirable features seem to be developed as a consequence of reducing the room air temperature to 60 deg. F. at night. During the warming-up period the register air temperatures rose considerably above the average required to maintain the room temperature constantly at 70 deg. F. From this it is evident that the increase in register air temperature was accompanied by increased temperatures for the air at the

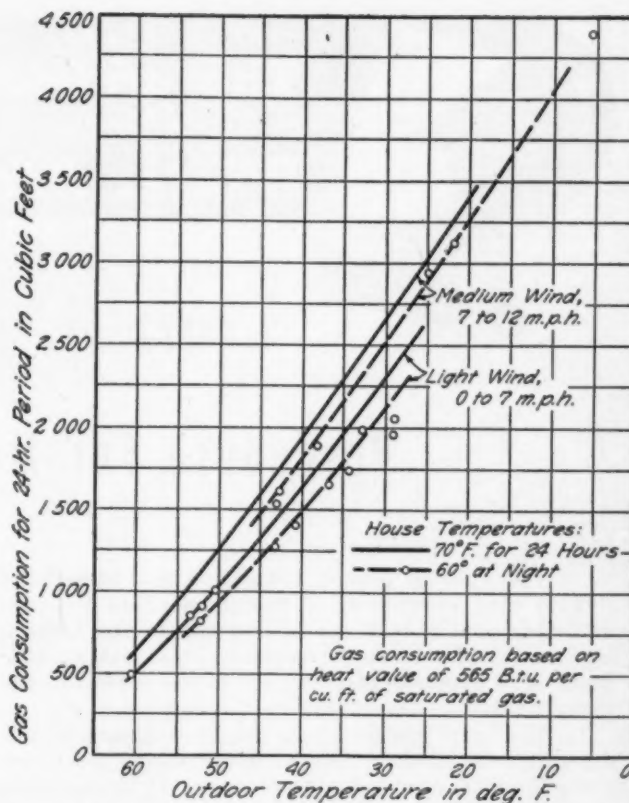


FIG. 44. GAS CONSUMPTION CURVES FOR TWO METHODS OF HOUSE OPERATION

ceiling, and the room was warmed from the ceiling downwards by the warm layer of air, the floor remaining comparatively cold. As a result the room air temperature gradient from the floor to the ceiling was greatest during this period, and even though the temperature of the air at the breathing level had attained 70 deg. F. by 8 a. m., the temperature of the air at the floor did not rise to a value comparable with that for continuous operation with 70 deg. F. at the breathing level until about 2½ hours later. Furthermore, the exposed wall had cooled during the night and the temperature of the inside surface did not return to normal until about 11 a. m. The net result was that although the temperature of the air at the breathing level was restored to 70 deg. F. by 8 a. m., the occupants were subjected to the influence of cold floors and walls until approximately 11 a. m. and were more or less uncomfortable during this period. Such a condition did not exist when a uniform temperature of 70 deg. F. at the breathing level was maintained for 24 hours.

The following conclusions are indicated by the results of these tests:

(1) With gas as a fuel, a fuel saving of from 4 to 8 per cent may be effected by reducing the room air temperatures to 60 deg. F. at night instead of operating continuously with room air temperatures at 70 deg. F.

(2) The fuel saving effected by reducing the room air temperatures to 60 deg. F. at night is accompanied by a sacrifice of comfort in the house during most of the hours before noon, brought about by the influence of cold walls and floors persisting over most of this period.

(Part 2 will follow)



HOW TO USE IT  
WHAT RESEARCH BACKS IT UP  
WHY EVERYBODY SHOULD ADOPT IT

AMERICAN ARTISAN, October-November, 1945  
RESIDENTIAL AIR CONDITIONING SECTION

entitled "How to Make a Comfort Survey, and How to Make Floor Plans."

Fig. A shows an illustration from Textbook 7 that should give you some idea of what can be shown by complete floor plans.

1) The exterior walls show locations of windows and doors. Some heating men use a single line instead of a double line to represent a wall. The double line does not take much more time to draw and is more convenient for showing locations of stacks and soil pipes.

2) The direction in which the doors open may help in later placement of registers. You don't want a register that will be back of a door that may be opened wide.

3) In figuring heat losses you are primarily interested in exposed walls. The dimensions shown near the outer walls will be less confusing than a mere statement that the kitchen is 11x16.5 feet. We prefer to indicate room dimensions to the nearest 0.5 foot. Instead of writing 11 feet 4 inches, for example, we prefer 11.5 feet. In the first place, it is not necessary to measure room dimensions to the nearest inch. In the second place, any later calculations of areas will be speeded up and there will be less chance of making errors.

4) The direction of the stairs is of importance when you are considering convenience to the home owner who has to fire a furnace. Or it may influence the designer in his preferred location for a return intake or warm-air register. In the standard information blanks (supplied by the Association at a cost of 15 cents for a single copy) you will find the sketches shown in Fig. B that enable you to quickly describe a stair construction.

5) Window dimensions are frequently shown on plans as 2 feet 8 inches x 4 feet 6 inches. This is all right, but you will speed up your later work if you show instead the "window area" and the "window crackage." This same double-hung window can be described as 12 square feet and 17 foot crackage. It gives you the two figures that will later be used in your heat loss calculations.

6) Locations of such important items as chimneys, bathroom fixtures, and kitchen equipment are not shown merely for appearance. They are shown because they may affect the location of the furnace or the placement of registers. Some layouts even show the locations of such items as davenport, beds, chairs, etc., by dotted lines. Such practice is good since it

Draw a Ring around illustration Below to indicate type of stairway.



PARTLY ENCLOSED



ENCLOSED

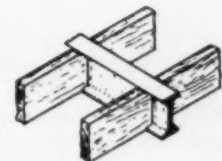
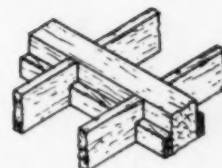
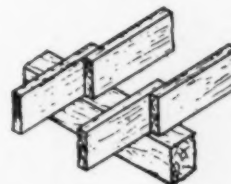
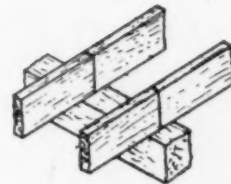


ENCLOSED



Fig. B

Draw a Ring around illustration below to show how joists are carried by girder.



If building has other type of girder and joist assembly, make sketch or describe fully.

Fig. C

#### Outline of Procedure for Indicating Register and Intake Locations

##### a. ON SECOND STORY FLOOR PLAN:

1. Locate warm air registers.
2. Locate return air intakes.
3. Indicate any cross-over connections between register location and riser location.
4. Indicate whether warm air registers are located at:
  - a. High Sidewall (symbol: H.W.)
  - b. Low Sidewall, above baseboard, (L.W.), or
  - c. In Baseboard (B.B.)
5. Where deflecting registers are needed, indicate angle of deflection by arrows or by a note.
6. Where high sidewall registers are to be used where the length of throw of air required exceeds about 13 ft., note the fact on the plan. (A smaller register having higher resistance is used in this case.)
- c. In large living rooms and sun rooms, two or more warm air registers and return intakes will provide better distribution than a single register and a single intake.

##### b. ON FIRST STORY FLOOR PLAN:

1. Locate second story risers.
2. Locate warm air registers for first story rooms.
3. Locate return air intakes for first story rooms.
4. Indicate whether warm air registers are located at:
  - a. High Sidewall (H.W.)
  - b. Low Sidewall, above baseboard, (L.W.), or
  - c. In Baseboard (B.B.)
5. Where deflecting registers are needed, indicate angle of deflection by arrows or by a note.
6. Where high sidewall registers are to be used where the length of throw of air required exceeds about 13 ft., note the fact on the plan. (A smaller register having higher resistance is used in this case.)

Fig. D

# TYPICAL EXAMPLE SHOWING LOCATIONS OF REGISTERS AND INTAKES

(The locations shown are not the only ones that are feasible)

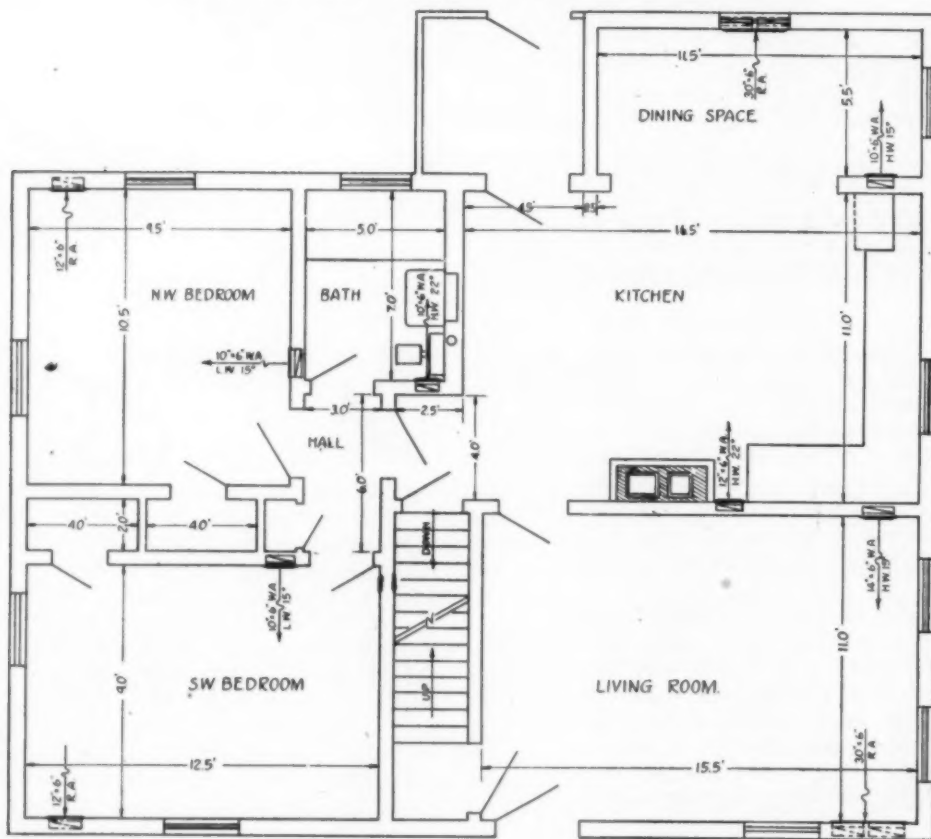


Fig. E

may show where registers should not be located.

7) Although floor plans are two-dimensional drawings, you must give the third dimension. The heights of ceilings and the height to the basement joist are both pertinent items.

8) The Information Blank of the Association shows sketches as given in Fig. C that quickly describe the basement joist construction. This information is vital since it affects the duct layout that can be used. The direction in which the basement joists run is also essential.

A careful study of Fig. A shows that there are few unnecessary details with the possible exception of the shading of the basement walls. We wish to emphasize that the time and energy required to make a floor

plan is not wasted. A few extra minutes in planning may save many dollars and many hours in actual construction work.

## Train Yourself to See Rooms

When you begin to indicate the locations of registers and intakes on a floor plan you need some amount of imagination—enough to enable you to visualize each room so that it is a room and not just some lines on a drawing. In order to locate registers according to the rules described in the last issue of this series of articles, it will be helpful if you can picture a room that is furnished with chairs, tables, davenports, chests, and beds.

The actual procedure is simple, as shown in Fig. D.

## SYMBOLS AND ABBREVIATIONS FOR HEATING PLANS

WARM AIR	RETURN AIR	ABBREVIATIONS
<p>  Riser to second story.   Riser to first story.   Riser from basement floor to joist level   Duct   Angles, Elbows.   Register  <p> B.B.—Base Board  L.W.—Low Wall  H.W.—High Wall  CLG.—Ceiling   Floor Register </p> </p>	<p>  Riser to second story   Riser to first story   Riser from basement floor to joist level   Duct   Angles, Elbows   Intake  <p> R.A.—Return Air   Duct connection below joist   Floor Intake </p> </p>	<p> S.P.—Smoke Pipe.  Fl.—Chimney Flue.  F.C.E.—Furnace.  Bl.—Blower  B.J.—Duct between joists  S.S.—Stud space used as return duct.  J.S.—Joist space used as return duct.  D.—Damper  Th.—Thermostat </p>

Fig. F

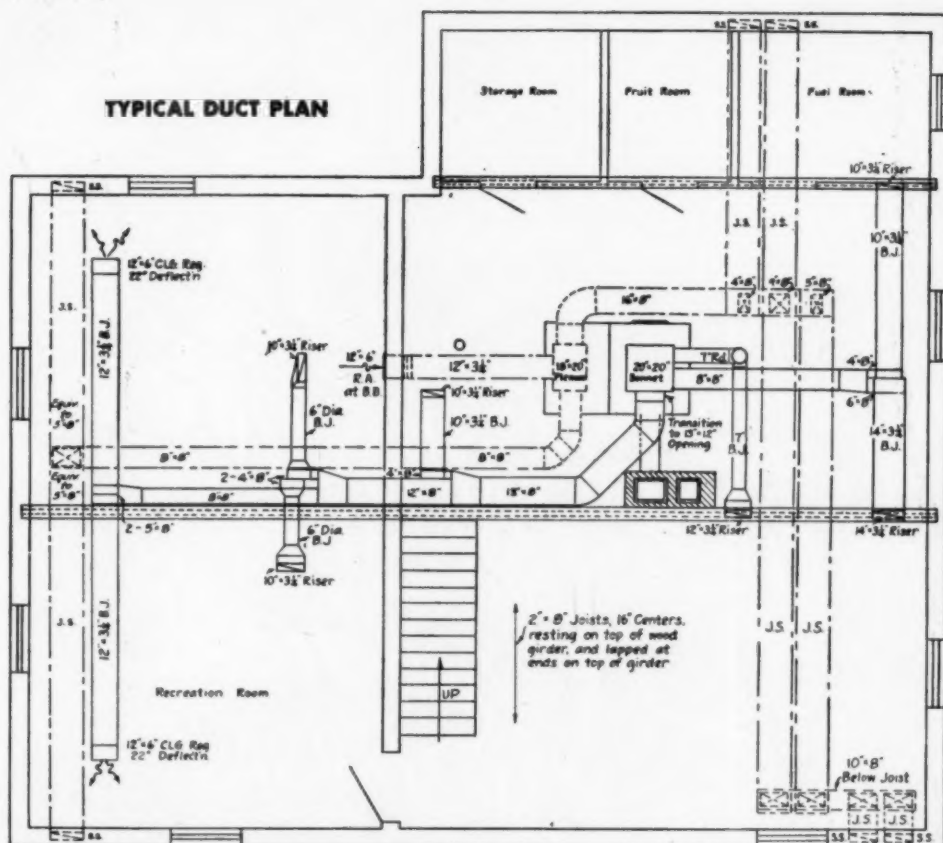


Fig. G

The Information Blank of the Association is provided with two sheets of thin tracing paper, and the top sheet is intended for the second floor plan. The possible locations of registers is frequently limited in second story rooms by the locations of the partition walls on the first story. We would like to avoid such boners as that committed by one of our students who showed a register that could be supplied only by a stack that would have had to come down through the middle of an archway opening.

A typical plan showing locations of registers and intakes is given in Fig. E. At this stage of your design layout you will not be able to indicate the sizes of the registers and intakes, but you should indicate their vertical location on the wall and also the deflection angle desired for the register. In general, deflection angles in excess of about 22 degrees should be avoided in order to keep the frictional resistance of the register to a low value. You must appreciate the fact that the suggested locations shown in Fig. E are for purposes of illustration only and are not the only ones for this floor plan. The return-air intake in the living room was purposely placed to one side of the window so that if full-length draperies are used, the intake openings would not be covered.

The short-hand symbols adopted by the Association are shown in Fig. F. They are few in number and can be easily memorized. The only symbol that may not be self-explanatory is the fifth diagram in the first column. Where a basement duct changes its elevation, we indicate the rise or fall of the duct by the three short lines drawn at right angles to the duct. Such a symbol would be used where a basement duct goes below a girder and then rises again.

### Your Profits Depend on a Good Layout

Every minute spent in studying a possible duct layout may pay off in 15 minutes of labor saved in the actual installation. Your final answer may not be obtained at the first crack—if it is, you are a genius and your talents are being wasted in the heating business. Since the location of the furnace may be limited by its nearness to a chimney or to a fuel bin, your attack begins by considering the best place for the furnace. If you have more than one possible location for the furnace, start with the best location. Later, if you feel that a change in the furnace location will simplify the duct system, it may be necessary to make a new start in your layout. The location of the furnace with respect to the chimney and coal bin is especially important for hand-fired plants, and in general it is good policy to insure that a good draft will be obtained even at the expense of a little more complicated duct system.

The next step is to tie in the registers and intakes with the furnace and blower. As every installer knows you will have considerable freedom in laying out a duct system. A short, simple duct system is preferable to one that is complicated. The example shown in Fig. G is for illustrative purposes only and give merely one man's answer. In this example, the 7 inch round duct leading to the kitchen register was made an individual branch. It could easily have been made a rectangular branch tapped off from the trunk line to the right. At this stage of the layout the duct sizes will not be known, but you should have a fairly clear picture of how the ducts would run and what sort of

(Continued on page 186)



# "Catalytic Oils"

- What they are
- Their war record
- Their future outlook

By H. A. Aronson

H. A. Aronson is chief engineer of Premier Furnace Co., Dowagiac, Mich. During the war period he was loaned to Petroleum Administration for War and, working from the Midwestern regional office, helped large users of fuel oil convert, adjust and adapt to war time fuels. The data in this report was gathered by the author from numerous sources and officials of PWA and may, therefore, be accepted as a fair statement of the "catalytic" oil problem.

**T**HERE have been many expressions of opinion the last three years over the merits of "catalytic" oil for home heating. A few oil burner dealers and engineers have claimed to know how to adjust and burn catalytic oil so the owner has no trouble. But by far the most of the comment has been severe criticism—adding up to an impressive list of reasons why catalytic oil is not and never will be as good as our pre-war fuel oil.

Today there is a great deal of speculation regarding the use of catalytic oil, both in the immediate future and in the postwar period. Its potential use is difficult to judge because so many factors, other than its desirability or undesirability, will affect its use.

Originally, most of our fuel oil was a simple distillate. It was obtained by a basic refining process that was a distilling operation. The crude oil, which contains myriads of hydrocarbons, was heated in a still and passed through to a separating unit, such as a bubble tower. In this process, the oil is fractionated entirely in relation to the various boiling points for its different hydrocarbons. This process is limited to those hydrocarbons with boiling points below those which would cause "destructive distillation" or an actual re-arrangement of the crude oil molecules.

With this process there is an undistilled residue of the heavier portions that amounts to as much as 50% of the original stock. As the refineries were primarily interested in obtaining gasoline and kerosene as prime products, the other fractions, including the middle distillates originally, were just by-products. As oil heating and the use of Diesel engines grew, the middle distillates assumed importance. There still remained a large amount of undistilled residue, however.

Some other products, such as lubricants or wax, could be taken from certain of the residues, but this took only a small part of them. It was found that the lighter residuals made good fuels in larger installations, so this use of residuals was encouraged. This grew so fast and to such proportions, that the residuals, formerly by-products, became increasingly important as fuels. Even pitch and petroleum tar are being burnt in larger installations. However, in many cases these heavier oils were sold with little or no profit; it was necessary to get rid of them as fast as the lighter products were turned out, as it was impossible to make the latter without residuals.

#### **Changes in Molecular Structure**

By heating these heavier products to higher temperatures it was possible to vaporize them. However, the temperatures required caused changes in their molecular structure, and if they were subjected to pressure at the same time, this change was acceler-

ated. This process was called "cracking," as it "cracked" the oil structure into smaller segments. One of the disadvantages to this was that the refining equipment required was heavier and more expensive and cost more to operate. Most refineries found it advantageous to adhere to established practices which had been continually improved and modernized as time went on. The products obtained were those with a ready market, and what cracking was done, was on a limited scale, pointed towards increasing yields or raising the quality of marketable products.

#### **The Cracking Process and Catalysts**

It was discovered that carrying on the cracking process in the presence of certain substances, called catalysts, caused a further decomposition of the molecular structure along very definite lines, so that it could be accurately controlled. It was found that by this process higher yields of high-octane gasoline were possible. Cracking, therefore has a very definite advantage over simple distillation as the actual chemical make-up of the hydrocarbons can be changed, so that only desired substances are produced.

Under war conditions when the supply of crude oil was definitely limited, and an exaggerated demand existed for high octane gasoline, Diesel fuel, petroleum coke, synthetic rubber bases and other products not heretofore so necessary, it was inevitable that as much of the crude oil be cracked into the desired products, with as few by-products as possible.

#### **Treating Cracked Fuels**

For these reasons, oil producers went into cracking plant operations on a very large scale. This does not mean that all of the cracked products are of the best and have been entirely successful. High octane gasoline has many undesirable characteristics as it comes from the cracking plant. Formation of gums is one of its weaknesses. This gum formation, which is not entirely understood, occurs upon exposure to oxygen. This gasoline is also far from stable. To be successfully used, it must be blended, treated or processed in some manner before it is satisfactory. Cracked Diesel fuels likewise have not been entirely successful having a bad habit of leaving a sticky residue that interferes with valve and injector operation.

Cracked fuel oils, especially in the domestic grades, offer similar disadvantages. At least those that have been offered so far have not been satisfactory. There are many unstable compounds present in the oil that have various reactions. Mainly they are the gums and certain elements that release free carbon upon combustion. Also they have an entirely different chemical makeup than simple distillates and consequently have

different combustion characteristics.

First, they, in common with other cracked products, are apt to be affected by storage conditions, particularly if exposed to air, in which case gums may form. They also seem allergic to any other oils that may be in the tank, and may react chemically. They have different boiling points, generally higher than distillates with the same specific gravity. Viscosity, flash, fire and end points also vary. Because of the gums and free carbon, residues are left after vaporization. Experience in burning them indicates a slower flame propagation also.

The net result is that difficulty is encountered in burning cracked fuel oils in existing equipment. This is especially true in any burners that depend upon vaporizing the oil from heat prior to combustion. Pot type and vertical rotary burners will not accept them satisfactorily, at least in the usual standard gravities. However, cracked kerosene will work satisfactorily in some cases.

Cracked fuel oils can be burned in present type high pressure burners, but not with 100% satisfaction. If catalytic oil is used in a burner set for distillate, the result is a large, dirty flame that will fill the furnace and will rapidly soot up the flame and smoke passages. In order to burn the oil it is desirable to go to oil with a higher API number (lower specific gravity).

### **More Air Necessary**

More air must be used, even though it means excess air with lower efficiencies. Different nozzle and pressure combinations must be determined experimentally. Probably the worst feature is that the flame characteristics vary so much that when a burner is apparently set for good results, a few days later, the burner will have to be reset. This indicates instability of the oil, stratification, or chemical changes in storage.

Sufficient experimentation has not been carried on to give any definite design specifications for modifying equipment as yet. This is largely due to not knowing if the "cat" oils are here to stay. From experience it would seem that if we will be called upon to use these fuels in their present state, burners will have to be designed with greater air velocities and turbulence. Different nozzle designs and operating pressures will be necessary. Because of the slower flame propagation, combustion chamber designs will be different. In all cases, existing high-pressure burners will be able to accept modification to handle catalytic oils.

### **"Take It or Leave It?"**

However, this would pre-suppose that the oil companies will simply put out cracked oil on a take it or leave it basis. This may be far from the case. The market for oil among pot-type burners and rotary burners is large. It is a profitable and desirable business for the oil companies, so it is certain that oil will be produced for this market that will operate in existing equipment. It may be that a distillate will be used, but it is just as probable that refining practices will be developed that will produce a catalytic oil that will be satisfactory in all respects, probably better than present distillates. It is also certain that a new set of oil specifications will be written if cracked oil is to be generally used.

All of the factors that affect the future production of oil in this country have been obscured by war needs and the lack of information made available. One of these questions is the amount of oil available in

postwar years. If visible reserves are high; if sufficient new fields have been opened up to compensate for the huge amounts of oil that have been used in the prosecution of the war; if new discoveries have been made, so that production will hold up, the road is clear, but as yet the question has not been answered. However, as long as we have been able to produce sufficient oil for the war machine in addition to necessary civilian needs, we should certainly be able to take care of the greatly curtailed post-war demands. This assumes that our present oil production is not being carried on by ruining present sources of oil from an excessively high yield, or by using uneconomic methods that will not be suitable under non-emergency conditions. It should also be remembered that the United States has always imported considerable amounts of oil. Due to war demands other less industrialized countries have increased their outputs of oil and tanker fleets have been built up, so we have a large potential oil supply from outside.

On the other hand, if our potential supply of oil is down, it will be necessary to stretch our oil supply, in which case cracking and polymerization processes will be generally used. Another factor is how much political control (Editors note: Certain officials of southern states are now trying to curtail out-of-state shipments of natural gas, some similar measures might be applied to oil) will be extended to the production of oil and the uses of petroleum products. This control is an indeterminate quantity and as likely to be based on political expediency as it is on necessity.

### **Oil—the Chemist's Paradise**

The demands for other products will also affect the use of fuel oils. Oil is a chemist's paradise and extensive research has been carried on in products made from petroleum bases. So far, synthetic rubber has been most successfully made from a petroleum base. Plastics, medicines, and various other products can be made from oil. Petroleum coke has been an important element in the production of electrolytic aluminum. Disregarding artificial controls, oil products will be produced that offer the oil industry the best and most profitable markets.

Gasoline will still be the number one product. There has been much talk about the motor of the future using exceptionally high octane gas. We will use a better gasoline than before, but it will probably be a straight run product, blended with some cracked gasoline, and "doped" with tetraethyl lead or other compound. The majority of high octane gasolines developed for aviation use are not desirable for the average car, under average conditions.

Fuel oils, industrial and domestic, represent an existing market for billions of gallons of oil per year, with no costs necessary to develop the market, but with a large investment already in equipment for producing and handling fuel oil. No education will be necessary, no sales cost necessary for the development of this market.

This does not mean that there will be no changes or field experimentation carried on. Unquestionably there are some large headaches in store for oil burner manufacturers and their services men, however, it is just common sense for the oil companies, who have been one of the most aggressive and forward-looking industries in the world, to insure an adequate supply of "acceptable" fuel oil to an existing market of extremely large proportions. Whether "acceptable" means distillate or catalytic remains to be seen.

# Excessive-Coking Coals Make Stoker Trouble

Bituminous coals tested by the Division of Fuel Technology, Pennsylvania State College, showed both good and bad results in automatic stoker operation. Tests were conducted in the laboratory and in residences. The poor performance of some of the coals was chiefly attributed to the following causes: (1) coke-tree formation; (2) out-fires; (3) poor response and overshooting of the thermostat; (4) excessive fly-ash; and (5) excessive clinker formation. The excessive coking nature of the coals seemed to be related to nearly all these items.

**D**URING the war period when coal was "pooled" by producers until even the coal dealer did not know what coal he was getting, the subject of "effect of type of coal on domestic bituminous stoker operation" of necessity had to lie dormant. But, now, with prospects of getting the type of coal ordered and using a coal which works best in the stoker and dwelling, the subject is again pertinent.

That some coals give better results than other coals in certain installations was beginning to be recognized when the war started. Numerous investigations were under way. One interesting report, of this nature, was released by Pennsylvania State College (Mineral Industries Experiment Station Bulletin 35) showing results in the laboratory (14 coals) and in two residences (7 coals).

All these coals, except one, were from Pennsylvania fields.

The stokers used were bin-feed, ash removing, fully automatic units.

The interesting feature of this series of tests can be stated briefly:

- (1) For the coals tested in the laboratory performance was judged very good with two coals; fair with five coals; poor with five coals.
- (2) For the coals tested in the two residences very good results were obtained with two coals; good results with one coal; fair with one coal; poor with three coals.

To be more specific, in the laboratory, most of these Pennsylvania coals showed marked tendencies to form coke trees. The average accumulation of coke for a 3-hour period amounted to 4.7 pounds during a 30 minute on-30 minute off cycle; 9.0 pounds during a 45 minute on-15 minute off cycle; and 1.9 pounds during a 10 minute on-20 minute off cycle. Note these figures are *averages*; under the 45-15 cycle some coals showed as much as 16 pounds of coke accumulation in three hours.

The power required averaged 23.0 kwhr per ton of coal fed which is about 30 per cent greater than for

average clinkering type stokers.

In the residence tests, other difficulties developed. It should be pointed out that from the comfort standpoint *alone*, meaning thereby uniformity of house temperature, these coals showed satisfactory uniformity with over-run or under-run occurring in strongly coking coals—but still better than hand-fired operation.

These house tests showed the average operating cycle in winter weather is about 15 minutes out of each hour. During the tests, stoker operation as long as 7 hours were encountered—in these cases the Pennsylvania coals filled the fire box with coke.

The worst problem encountered was with fly ash. For these Pennsylvania coals, five coals showed fly ash production as roughly 1 per cent of the coal burned, by weight. In a house burning 10 tons a winter this is about 200 pounds of fly ash or some 12.5 cubic feet of fly ash. 12.5 cubic feet of fly ash, in the usual furnace or boiler, would necessitate removal of fly ash about twice each week.

These tests did show that double screening (removal of the fines) reduces fly ash accumulation. Therefore, the coal size and coal structure are more influential on fly ash production than the stoker or the heating plant.

As for clinkering, these Pennsylvania coals are not ordinarily considered clinker producing. The tests showed that clinker was pretty largely found when the stoker operated for long intervals and did not appear when operation was at short intervals.

An interesting sidelight from these tests showed that the draftstat was able to maintain the chimney draft at the preselected level within plus or minus .01 inch. The conclusion is the stoker fan was able to keep holes blown through the fly ash.

While these tests are not assumed to be completely exhaustive, they do seem to indicate that stoker coals must be selected for certain coal characteristics and that when these necessary characteristics are absent, difficulties should be expected.

# Conversion Eliminates Drafts and Cold Floors

By Robert L. Marks, Topeka, Kansas

Taking an old gravity installation, the author of this article revamped the duct system completely, sizing all basement piping to resistance to insure the required volume of air needed to maintain uniform temperatures. Old stacks and registers were left alone. The result was: elimination of drafts, temperatures within three degrees from room to room and \$5.00 per month less fuel cost.

**T**HIS article is offered as one example of the methods used to remedy such faults as uneven temperatures, cold floors, and drafts, in blower-filter warm air heating jobs.

The installation does not depend so much on the size of the ducts, but does depend on the relation each duct bears to every other duct, every individual duct must deliver the proper amount of heat to offset the heat loss in that particular room, and this amount of heat is governed by the temperature of the entering air.

This job is designed, using a bonnet temperature 170 degrees, basement temperature 60 degrees, and static pressure of .06 in. w. g. The bath room (24) is purposely heated 10 degrees higher than the other rooms. Relative proportion in sizing the ducts is maintained throughout.

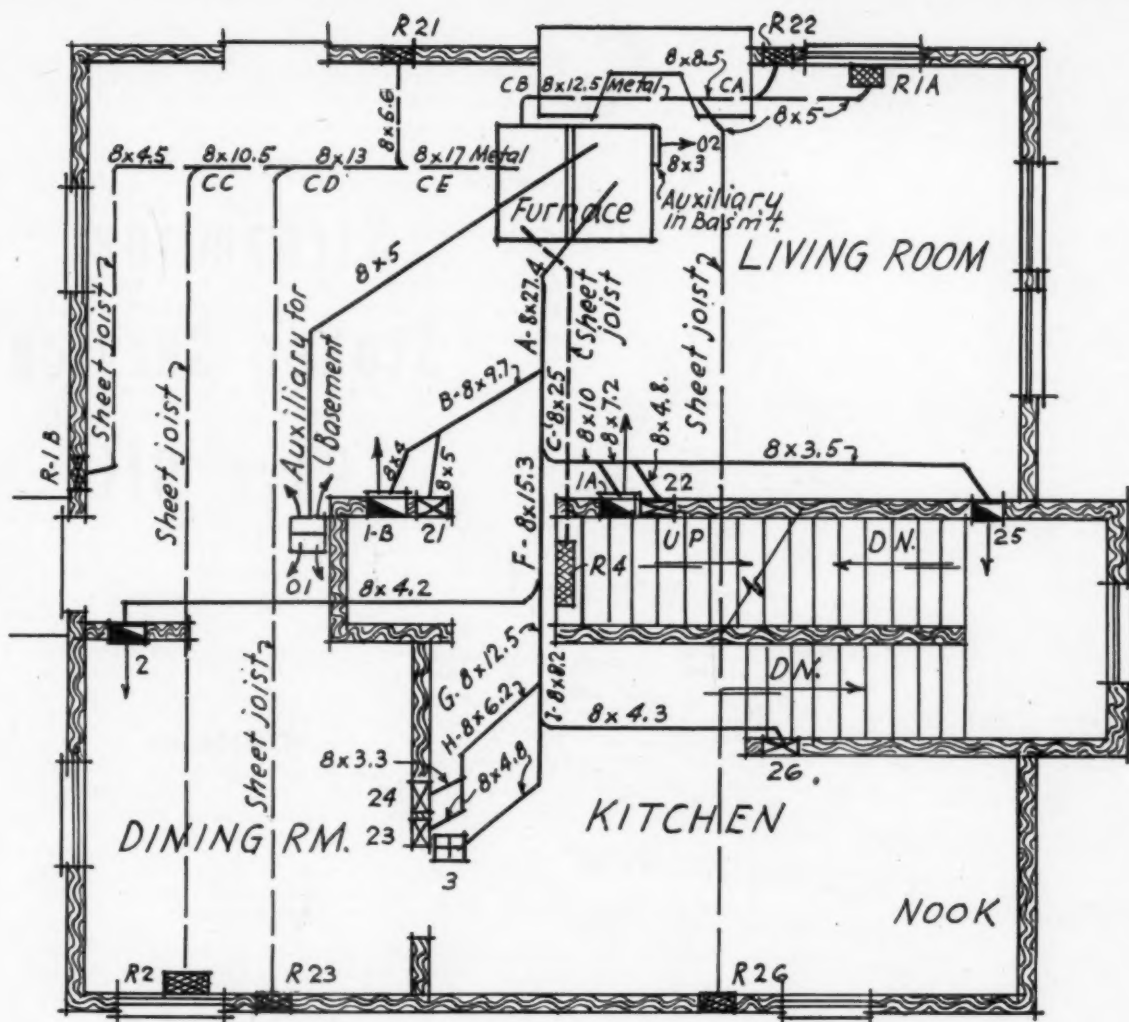
To show perfect figures on the data sheet required four steps; the third step showed a difference of 3

degrees in some of the rooms. This is not out of line, and results of the third step could have been used, as a 3 degree difference would be satisfactory. It would not matter if the results shown on the sheet amounted to 65 degrees or 75 degrees, as we only estimate the bonnet temperature. The c.f.m. will vary, and as the heating plant is flexible, the thermostat will control the temperature in the (key) room and the other rooms will have the temperature as proven on the data sheet when the room with the thermostat heats to the desired temperature.

Cold floors and drafts are closely allied. A draft across the floor will result in seemingly cold floors, as effective temperature is governed somewhat by velocity of the air, the cold air falling to the lowest level, so the coldest air in the room is on the floor.

To eliminate as far as possible these faults, the plan shows that the landing of the stairs extends out farther than the rest of the house. While this is

Warm Air Supply System															Return Air System						
Stations (Noted on Plan at Registers)	B.T.U. Loss	Actual Length	Equivalent Length	Temp. at Stations	C.F.M.	Round Pipe Size Per 100' Resistance	Round Pipe Size Corrected to Equiv. Ft.	Rectangular Duct	Velocity (FPM)	CFMX FPM	Distance Between Stations	Temp. Difference Duct and Basement	Actual Temp. at Stations	Room Temp.	Stations	Actual Length	Equivalent Length	C.F.M.	Round Pipe Size Per 100' Resistance	Round Pipe Size Corrected to Equiv. Ft.	Rectangular Duct
A .....	9	94	165	965	15.8	15.7	8x27.4	670	650,000	9	110	105	..	..	R1A	12	53	128	7.5	6.8	8x5
B .....	13	33	158	296	10.2	9.7	8x 9.7	550	163,000	4	105	160	..	..	R22	18	68	138	7.7	7.3	8x5.6
1B Living r. 8,160	15	55	152	102	6.8	6.1	8x 4	455	46,000	2	100	156	70	70	CA	..	68	256	9.7	9.1	8x8.5
21 Bed r. .. 8,245	23	73	144	114	7.2	6.9	8x 5	410	47,000	2	100	147	70	70	R26	39	89	108	7.0	6.9	8x5
C .....	12	94	162	869	15.2	15.1	8x25	625	555,000	2	100	162	..	..	CB	..	89	364	11.0	10.9	8x12.5
D .....	14	91	159	275	9.9	9.8	8x10	455	125,000	2	102	159	..	..	R4	14	54	194	8.7	7.8	8x6.8
1A Living r. 8,250	15	70	155	100	6.8	6.4	8x 4.4	455	45,000	2	100	158	70	70	R1B	20	60	125	7.4	6.8	8x4.5
E .....	16	91	157	175	8.4	8.3	8x 7.2	440	77,000	2	99	157	..	..	R2	34	74	170	8.3	8.0	8x6.8
22 Bed r.... 7,900	25	85	146	110	7.0	6.8	8x 4.8	410	45,000	6	97	146	70	70	CC	..	81	295	10.2	10.0	8x10.5
25 Landing. 3,925	31	91	127	65	5.8	5.7	8x 3.5	335	42,000	14	97	133	..	..	R23	31	81	126	7.4	7.2	8x5.5
F .....	15	94	151	474	12.1	12.0	8x15.3	550	260,000	4	102	160	..	..	CD	..	81	421	11.6	11.1	8x13
2 Dining r. 6,400	27	62	132	100	6.8	6.3	8x 4.2	430	43,000	13	100	137	70	70	R21	15	65	143	7.8	7.3	8x5.6
G .....	18	94	...	374	11.2	11.1	8x12.5	560	250,000	3	100	155	..	..	CE	..	81	564	12.9	12.5	8x17
H .....	22	92	...	157	8.0	7.9	8x 6.2	450	70,000	4	95	148	..	..	....	..	..	...	...	...	....
24 Bath ... 3,120	31	91	...	56	5.5	5.4	8x 3.3	310	42,000	5	88	139	80	80	....	..	..	...	...	...	....
23 Bed r.... 5,890	32	92	...	101	6.8	6.7	8x 4.8	380	38,000	6	88	131	70	70	....	..	..	...	...	...	....
1 .....	20	94	...	217	9.0	8.9	8x 8.2	470	102,000	2	95	140	..	..	....	..	..	...	...	...	....
26 Bed r.... 4,590	34	94	...	86	6.4	6.3	8x 4.3	360	45,000	9	80	126	70	70	....	..	..	...	...	...	....
3 Kitchen . 7,840	24	54	...	131	7.5	6.7	8x 4.8	490	64,000	3	80	133	70	70	....	..	..	...	...	...	....
01 Bamt. ...11,000	18	53	...	117	7.3	6.6	8x 5	...	...	..	...	...	..	..	....	..	..	...	...	...	....
02 Bamt. ...3,668	2	2	...	45	5.0	5.0	8x 3	...	...	..	...	...	..	..	....	..	..	...	...	...	....



FIRST FLOOR PLAN

not unusual, there is considerable heat loss at this point, and results in a draft down the stairs; the register (25) will overcome this so there will be no noticeable draft down the stairway. The auxiliary ducts in the basement (01) and (02) will heat the ceiling of the basement and increase the temperature of the floors. 01 should be equipped with two diffusers, throwing the air both ways; 02 is just a stub opening out of the furnace. These auxiliaries are located to heat the basement ceiling at important places, the only section not warmed is under the kitchen No. 3.

Seldom are the returns given enough attention. Simply locating the grills at the most advantageous places, then sizing them to equal the supply as a whole, results in one or two doing the most work and several of them not working at all. The waste alone is a big item, and the air flowing across the floor to the most active grills travels far and fast, causing cold floors and drafts.

The grills here are placed with the idea of the return air flowing as slow and as short a distance as possible, and draining selected localities. They are figured to equivalent length, and the resistance built up so that each return collects its allotted amount of air. The joist space is sheeted wherever it is practical, and connected to the main metal ducts with opening sizes as shown.

The blower will pull from the line of least resistance, and the amount will be in proportion to

that resistance. The resistance is built up in the connections to the main duct; the area of the joist must always exceed generously the area of the connections and the main ducts to compensate for the difference in resistance between the joist structure, and the metal ducts.

I am aware of the argument that these charts are not absolutely correct, the results we are striving to obtain are **relative proportions**, and even though the charts are not exactly correct, the proportions will be relative. The Voorhees chart shows that 965 c.f.m. will at .06 S.P. require a 15.7-inch round pipe for 100 feet of length, this size pipe delivering 965 c.f.m. may not have .06 S.P. or at exactly .06 S.P. it may not deliver exactly 965 c.f.m. but if this chart is used on all ducts the proportion will be the same. The kitchen No. 3 may not get exactly 131 c.f.m. but it will get a proportion as 131 is to 965. This is true of the other charts, at No. 3 at 6.7-inch pipe may not deliver exactly 131 c.f.m. at 54 equivalent feet but it will deliver the same as a 7.5-inch pipe will deliver at 100 feet.

The loss of temperature in ducts is governed by temperature difference between the air in ducts and the basement, the distance the air travels, and the velocity and the amount of air in the ducts, the Kroeker chart takes all these in consideration, and while the chart may not be absolutely correct, the relative proportion is the same, and the resulting relative proportions will be the same.



NASSAU ENGINEERING COMPANY  
IRON FIREMAN AUTOMATIC HEATING

GLEN COVE, LONG ISLAND



PHONE GLEN COVE 226

August 7th, 1941

To Our Customers:

Hot today, but Winter is just around the corner! By October you will want your Iron Fireman to start the steady work of heating thru another season. Have you given it the necessary service?

In May we mailed you a notice of our Summer Service Plan. We have not heard from you. This second notice is sent in the hope that you will be sure of servicing your Iron Fireman.

You change the oil in your car every so many miles. All mechanical equipment needs a periodic check up. Here is what our Summer Service Plan calls for.

1. Vacuum cleaning heating surfaces of furnace or boiler.
2. Vacuum cleaning smoke pipe, and base of stack.
3. Cleaning out firebox.
4. Cleaning air passages in tuyeres.
5. Cleaning plenum chamber.
6. Cleaning auxiliary air line.
7. Sealing minor air infiltration leaks.
8. Removing coal from hopper and worm housing.
9. Cleaning and painting inside of hopper.
10. Clean, oil, and test motor.
11. Thoroughly check fan unit.
12. Flush gear case and refill with approved oil.
13. Complete lubrication of entire unit.
14. Inspect and adjust all dampers.
15. Inspect and adjust automatic draft regulator.
16. Inspect V-Belts.
17. Clean and adjust all electrical controls.
18. Flush and check operation of low water cutoff (On steam boilers only)
19. Furnish necessary instruction data.

If you have taken care of it yourself or had someone else do it—fine. If not, will you take care of this or ask us to do so.

Very sincerely yours,

NASSAU ENGINEERING COMPANY

**H**IT or miss, spasmodic effort in coping with service work incident to selling stokers, oil burners and other heating appliances must yield to good organization, in the experience of the Nassau Engineering Co., Glen Gove, N. Y. This dealer now has 2,500 stokers in active service in this area and it is emphasized that they can be kept in daily use only by a complete and accurate service campaign pivoted around summer work.

The original aim of the Nassau service department was entirely preventative. But in late years due to labor and other shortages the department has had to work hard the year-round. The force requires the services of seven mechanics, an office staff of two and there are four trucks. This service department is entirely separate from the selling and installing of new stokers.

The company conducts a consistent mailing campaign to get service work. Accompanying form letters show what is offered. One important result of these letter campaigns, always conducted in late spring and summer, advises Mr. Munson, is that stoker owners have now become summer-service-conscious and when the usual reminder from the office was omitted, as has been true for the past two years, owners send post cards and telephone requesting the summer service without having to be reminded. Under current conditions this fully occupies the time of the mechanics. To round out the program, the Nassau company services and carries on hand vital repair parts for six

popular makes of competitive stokers, this being due to inability of some dealers to handle their own service.

#### SPECIAL OFFER

#### Iron Fireman ALL YEAR Plan

In addition to the enclosed Summer Service Plan we are inaugurating an All Year Plan. This includes the regular Summer Service as outlined. In addition we will make three checkups on your Iron Fireman during the heating season. At that time we will do #1, #2, #10, #11, #14, #15, #16, #18, and #19 as outlined on the Summer Service Plan. This means a thorough cleaning and checkup. Ordinarily such a call would cost \$4.00. In connection with the Summer Service Plan we will offer you both for a net sum of \$12.00.

To take advantage of this your check must accompany the return postal. Just write on the postal "All Year" and cross out "Summer Service Plan", and enclose your check.

The Summer Service will be done during the Summer. The three winter cleanings and checkups will be spaced about two months apart to give you the most efficient use of your heating plant.

REMEMBER A CLEAN BOILER BURNS LESS COAL.



# **NASSAU ENGINEERING COMPANY** IRON FIREMAN AUTOMATIC HEATING

GLEN COVE, LONG ISLAND

PHONE GLEN COVE

A well organized department necessarily embraces two outstanding factors, says Jack Butler, head of Nassau service. One is scheduling and routing trucks and men to conserve tires, gasoline, truck repairs and time. By this is meant that calls are made in groups insofar as possible. Jobs are scheduled one week ahead and orders are grouped by towns and dates. If a single call is received from a remote town and it is likely that other calls will come in later the work awaits the accumulation of a list until there are at least three calls for the same date and in the same town.

The second aspect of a good service department is found to be adequate stocking of repair parts. A large and varied stock of parts, motors and control instruments are always carried in one of two buildings occupied by the service division of the Nassau Engineering Co. For example, there are worm screws and tuyeres for every one of the Iron Fireman models sold by this contractor. The individual pieces are set in groups according to stoker model. Thus mechanics

Reminder letter, upper left, used to follow up summer-service letter campaign conducted in late spring and summer. Object is to make stoker owners summer-service conscious.

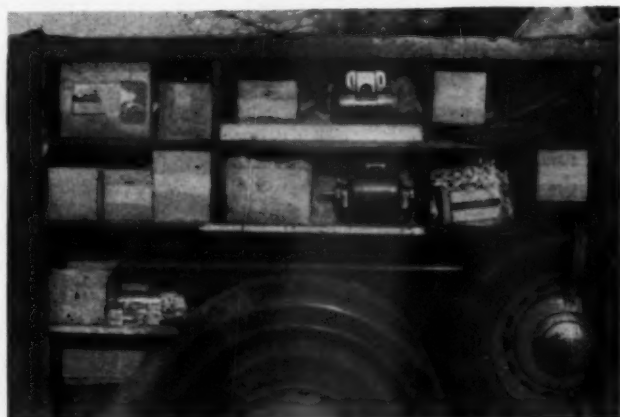
Card, lower left, describes all year service plan which ties in with summer service. Three winter cleanings and checkups are offered.

Credit letter, right, stresses the connection between satisfactory service and prompt payment.

All three letters are part of a consistent mailing campaign to get and keep service work.

have only to pick up the tuyere worm screw, transmission or whatnot applying to a particular model, remove one of two tags thereon attached, hand the tag into the office for billing and place the pieces in the truck.

In the other service building, known as the "control" room, Nassau carries some 75 electric motors ranging from one-eighth to three horse power. In another room are several sets of all regularly used electric control instruments such as wall thermostats, aquastats, pressuretrols, hot water cut-offs, relay switches, day-and-night controls, stack and kindling controls. Various instruments stocked here approximate 165 of all types.



To Our Customers:

Materials are getting hard to obtain, credit is tightening and unless we pay our sources of supply promptly, we don't get the material.

Re: SERVICE

In the past, our sources of supply, as well as we, have been too lenient. Because of this tightening of credit on the part of the business houses with whom we do business, we are forced to change our terms as follows: All your current monthly invoices must be paid on or before the tenth of the following month in order to earn a 2% cash discount or the account must be paid in full by the 25th net. If not paid by the latter date, no further Service will be rendered until the bill is paid.

We hope you realize the seriousness of this situation, for we see no improvement for some time to come and it is very important that we all pull together.

May we also suggest that you help us to render you satisfactory Service. When Service has been rendered, won't you notify us at once if it is not satisfactory? Unless we are so notified, we have no way of knowing and often it is not until an invoice has been rendered that we receive your complaint. By then, too long a time has passed for the Service man to remember the exact circumstances surrounding his call.

For your information, our Service charges are as follows:

	1 Man	2 Men
Up to 1 hr. - Minimum charge		
2 hrs.	\$2.50	\$3.50
3 hrs.	4.00	6.00
4 hrs.	5.40	8.00
	6.80	10.00

Calls received between 5 PM and 7 AM and on Sundays and Holidays, where Service is rendered, will be billed at a 50% increase over this schedule. Travelling time is charged one way.

Will you try to describe the nature of the Service needed? This will help us decide whether one or two men are needed.

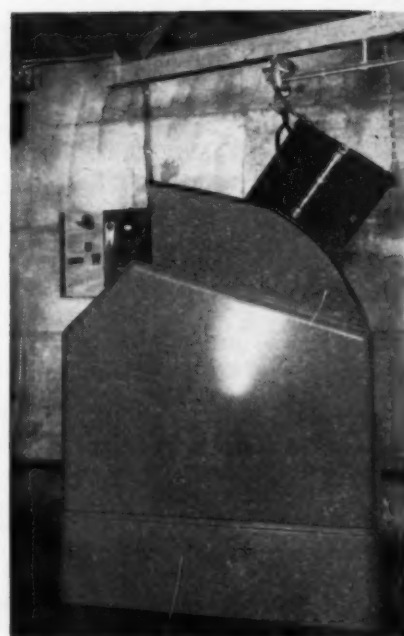
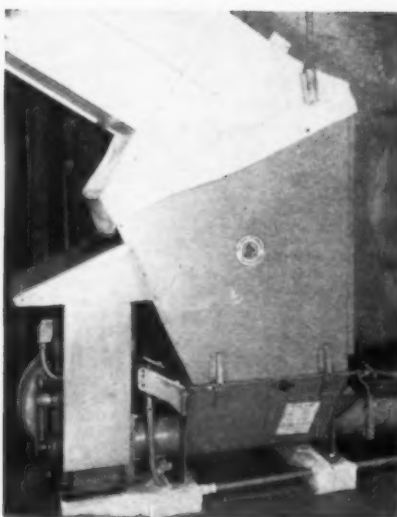
We are going to try to keep to this schedule. With higher prices in sight, your part in paying promptly will assist us in doing this.

The reasons for maintaining a full line of repair parts and assemblies are, first, to make sure that all job requirements can be met quickly and, second, because it is found better to install new instruments and transmissions than to try to tinker with them on location. The ailing parts are brought back to the shop repair department, repaired and if good enough for future use placed in stock. This saves time and gives prompt customer service. Electrical instruments in most cases, though, are sent back to manufacturers for repairs. In some cases the latter make price allowances and return new instruments.

Another fine point of organization here is in the trucks themselves. One truck, devoted entirely to

Service truck of the Nassau Engineering Company with the door open (left) and closed (below). The open service door shows the eight lockers that make it a veritable "shop on wheels." Door is hinged at the base and spring locks keep the lids shut.





When stoker is pitted as shown (left) a special chute of 18 gauge steel can readily be furnished if bin is remote. A practical plan (center) for feeding the hopper of a school stoker when the coal bin is on the floor above. The stoker hopper (right) is fed by crane and hoist. The bucket from bin to hopper is automatically tripped over hopper. It empties and rights itself.

summer service, has large doors on its sides. These are let down on location and cement, paint, wipers, flue brushes and other required tools extracted. A vacuum cleaner is carried in the center of the truck. The men are ready for work. The Nassau company owns and operates four cleaners. Service men of this crew may also replace smoke pipes and make similar minor repairs. If larger repairs are needed these are noted on the mechanic's work sheet and turned into the office nightly.

The following day another truck, this time a repair truck, calls with the required parts and completes the repair. This order might require a new thermostat, transmission, worm screw, etc. One member of the repair crew is a qualified heating engineer, another a licensed electrician.

The arrangement of this type of vehicle inside is unique in that it is a veritable "shop on wheels." Along both sides are eight lockers per side each 18 inches by 24 inches. Doors are hinged at their bases, spring locks keep the lids shut. Typical contents are drop cords, mason trowels, fire clay, bricks and wire brushes and 125 sizes and types of bolts, screws and nuts all in glass jars with tops. There also are electric drills, an assortment of bits for them, pipe elbows, rigid pipe, smoke pipe, tuyere parts and even mechanic's soap so that workers can wash up before

leaving the building.

Every detail thus is planned beforehand. Service is not hit or miss, there is no waste time for either mechanics or owners. Only in this way has the Nassau Engineering Co. been able to keep its 2,500 users happy about their stokers.

1. The Coupon Book Holder shall fill and sign one coupon for each Prospect, and send coupon or coupons to the dealer whose name appears on the cover of this book.

2. The coupon book holder shall file coupons only for Prospects (individuals or companies) whom he believes to be receptive to the advantages of automatic firing and heating.

3. The coupon book holder shall receive from the dealer the sum of Five Dollars (\$5.00) for each Iron Fireman automatic stoker or self firing furnace sold to, and installed for, a prospect whose name and address is filled in on a coupon in this book, and previously accepted for filing by the said dealer. Said dealer agrees to do all the work of selling each prospect, and upon completion of the sale and installation of the equipment, to promptly pay the amount stated above, which will constitute remuneration in full for the assistance rendered by the coupon book holder.

4. The coupon book holder's coupons will be accepted for filing by the said dealer only if they do not duplicate prospect names previously filed by other coupon book holders, by the dealer, or by his salesmen. The dealer will endeavor to notify the coupon book holder of any cases in which prospects submitted by him, to the dealer, cannot be accepted for filing.

5. Coupons will be accepted for filing only if they name prospects for stoker or furnace installations located in the territory in which the dealer is authorized to sell equipment.

6. Coupons in this book must be dated when offered to the dealer for filing, and are valid for redemption, under the above conditions, only if the equipment is sold and installed by the dealer within a period of three (3) months following the date of each coupon filed.

**Cash Award Coupon**

Prospect's Name \_\_\_\_\_

Address \_\_\_\_\_

Is, in my opinion, a good prospect for the purchase of an IRON FIREMAN. If this prospect buys an Iron Fireman Stoker or Automatic Furnace from the dealer whose name appears on the cover of this book, within a period of three months after the date of this coupon I am to receive \$5.00 from the dealer. Remittance to be made to me immediately after installation of the stoker or furnace, in accordance with the conditions stated in this Coupon Book, to which I hereby agree that no payment is to be made to me if the name of the prospect is already on file with the dealer on the date this coupon is received by him.

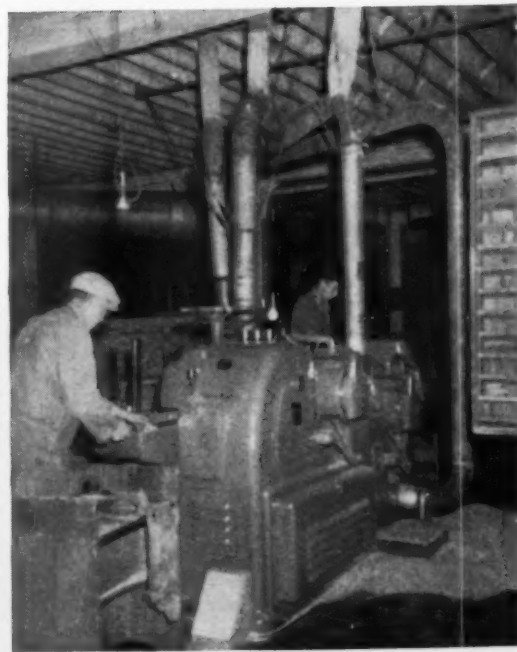
Signed \_\_\_\_\_

Address \_\_\_\_\_

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# Getting the Most Out of Your Press Brake

1001 Standard and Special Bending,  
Forming, Flanging, Punching Operations  
Your Press Brake Can Perform

By Ernest E. Zideck  
Sheet Metal Consulting Engineer

## Fabricating Truck Body Panels and Parts

**D**ELIVERY trucks such as we see in the accompanying Picture 1 were often built by comparatively small shops in the pre-war period and will be so built after the war for two reasons:

First, bakery, laundry, store or other such concerns using delivery trucks usually have their own ideas of what they want; the local builder will heed their suggestions, whereas the larger builder holds to a uniform design and is not amenable to making changes to please a customer who will buy only a limited number of trucks.

The second reason is that there are in every state and locality laws and ordinances which it is easier to comply with if the vehicle is built locally. There might be other reasons, but it is a fact that in Detroit, for instance, there were numerous small concerns engaged in the building of these vehicles, while the large producers of buses, like the Yellow Coach Mfg. Co. at Pontiac, Mich., very seldom bothered to produce any-

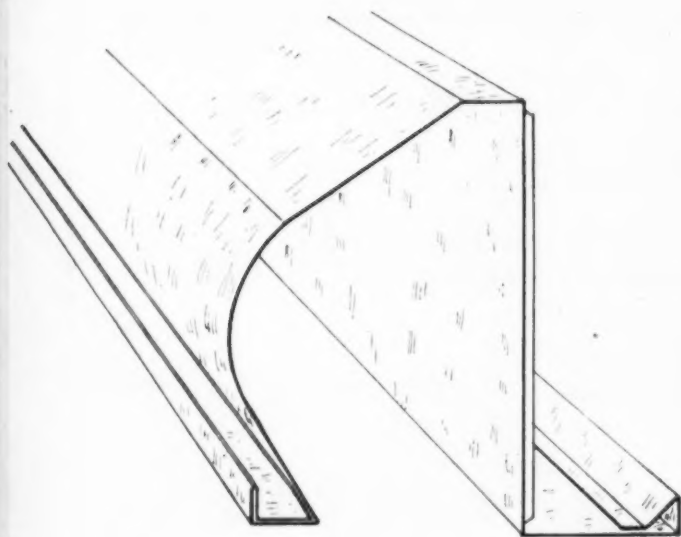
thing that did not call for a uniform design in quantity.

We are interested in these constructions because the panels, the doors, the roof and practically all sheet metal work that goes into these bodies is done in a press brake. The builder of these vehicles buys the chassis with the cab—he does not build the cab—and erects a body upon the chassis to suit local demand and conditions. In many cases the skeleton body is built of wood, with sheet metal covering. In other cases, the whole body is metal, the sheet metal skin supported on light structural steel framework. Welding is employed in building the frame, and sheet metal sub-assemblies are spotwelded or seamwelded and finished, with a minimum of arc or acetylene welding being done in the final assembly.

In Picture 2 we see a press brake operating in the forming of panels for the body. This picture is interesting in that we see here an arrangement whereby

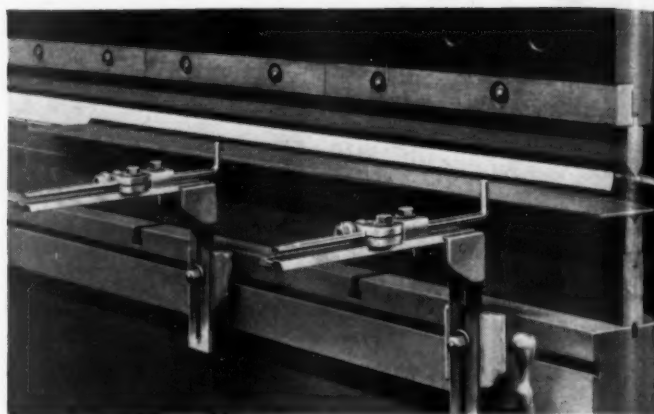


(Photo 1)—Truck bodies of this type—built to special specifications—and requiring short run fabrication of parts are a profitable field for the power equipped sheet metal shop.  
(Dreis & Krump photo.)



the standard gaging fingers are used from the *front* of the brake, and in that a "filler block" is employed for elevation of the female die to a desired position. Practically all makes of up-to-date press brakes have such provisions for fastening the gages from the front of the brake, as shown. In wide panel work the gaging from the front is more secure in that the operator can hold the metal to the gage. As previously explained in these articles, wide sheets of metal are liable to slip past the gaging fingers; in other instances one end of the sheet might be slightly out of the horizontal in contacting the gage, which results in wrong dimensions in the braked part. So that, if we want these wide sheets of metal to be braked right, it is best to gage from the front of the brake.

A seemingly complicated piece of press brake work is shown in the drawing, which shows a frontal por-

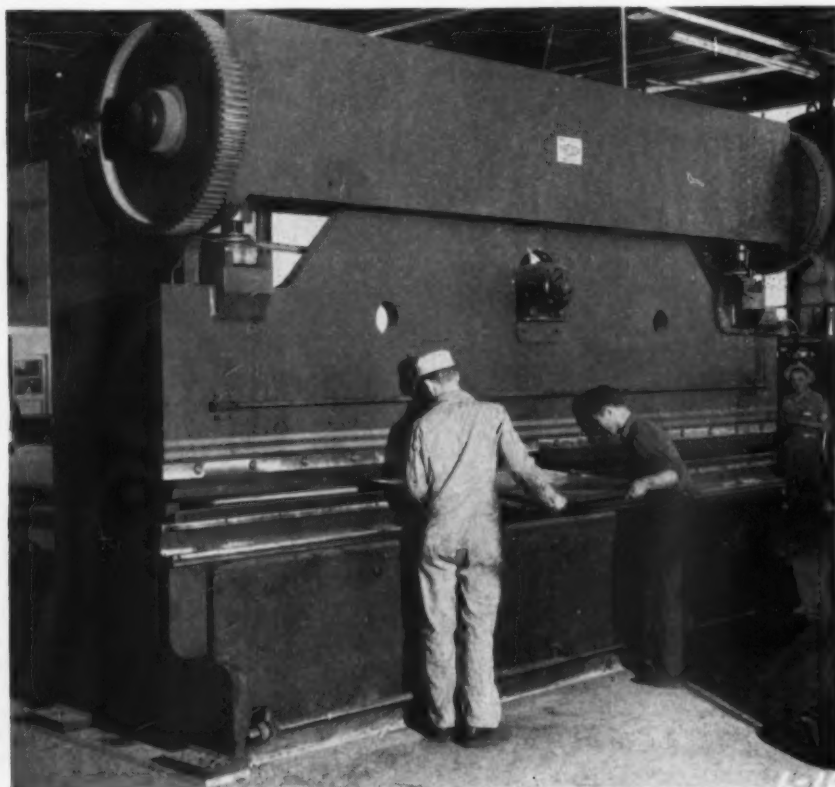


Left—A seemingly difficult piece of press brake forming, but readily accomplished (see text) without any special equipment. Above—Photo 2—Gaging from the front is almost a necessity in doing wide panel work. (Cincinnati Shaper Co. photo.)

tion of the part radial and flange. To make this part we form the part entirely straight longitudinally, with the doubled-up portion braked first, the opposite side braked next, the radial portion following, and the two bends shown at the top in the picture last. Then we bandsaw across the part where the side-radial is shown, then form the radial and brake the flange, finishing with welding together the cut out metal. These formatures appear difficult then only if we do not examine the part thoroughly and do not know that the part was bandsawed to suit, and the cuts welded, finished abrasively afterwards, leaving but very slight marks of welding.

Picture 4 shows a press brake in operation, the operator and his helper braking a *door* for the delivery body. For stiffening, the metal was braked across from corner to corner, which is a very old and still much used method of stiffening metal panels to prevent the metal from springing back and forth and rattling.

In doing this kind of "stiffening" of the panel in press brake it is best to use a standard die, 90 degrees, for the male die, and a flat die for a bed. In many cases the simple "hit" of the metal by the radial portion of the male die against the standard flat die will suffice to provide pronounced enough groove-marks stiffening the metal. If we want the grooves more pronounced, we can cover the flat die with a layer of softer metal



(Photo 4)—Pieces like doors which take abuse are cross broken to obtain stiffening before forming. A standard, 90-degree male die hitting on a flat die is used. (Dreis & Krump photo.)

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Above — (Photo 6) — Home made radial formature dies with an outside metal cover on a non-metallic core. War time practice substitutes a "rubber bed" for the female die. Such a rubber bed is flat and works with any radius of male die. Dries & Krump photo.)

Right — (Photo 5) — Bulky pieces requiring use of gages on the back side may need two operators to form—as in this particular section which has required several progressive compressions for each identical half. (Dreis & Krump photo.)



than that which we are working, or with thin cardboard or the like. We should not use a standard female die in this stiffening because without "hitting" the metal we do not stiffen it, and the formed groove will cause the metal to flap.

In Picture 5 we see an interesting operating feature in that one of the operators is back of the brake, guiding the bulky part to lie against the gages. The front operator cannot see the gages, the formed part obstructing his view, and inasmuch as he cannot depend on proper gaging of the curved-up metal from his front position, he has his helper stationed in the rear of the brake to hold the part to the gage and signal him when the gage is contacted right and when to strike. In operating a press brake in connection with the forming of complicated shapes, the operator must use his ingenuity in arranging for doing work which might seem impossible. With a proper visualization of what the particular die-set will do to metal placed in a certain position, there is hardly a formature which cannot be accomplished in the press brake.

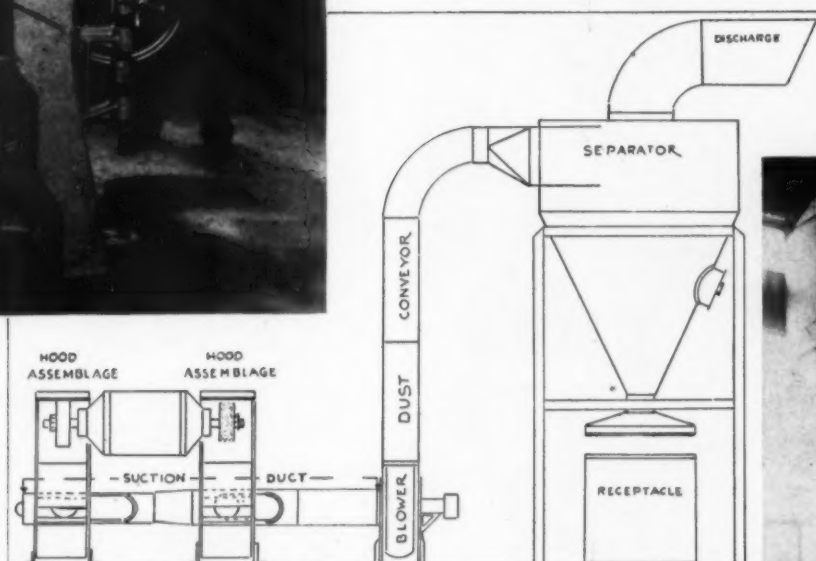
In Picture 6 we see radial formature dies which can be constructed (on the press brake) in the sheet metal shop. For these formations the female die has been lately replaced by a "rubber bed," which is adjustable to any size of radial and dispenses entirely, if we are working light gauges of metal, with radial, female steel dies, each made for only a certain size of

(Continued on page 182)



Left—Hoods, manifolds, fans, ducts and collector in tire retreading plant. Complete assembly sold as a unit by Industrial. Sold in most states in the country. Center—Diagram of typical regrooving machine setup. Below—Collector and waste bin for reclaiming debris from tire regrooving machine.

By  
R. C. Nason



## Collector Systems For Tire Retreaders

**T**AKING advantage of the acute tire shortage situation and the active efforts of tire recappers, regroovers and repair companies to cope with the emergency, the Industrial Sheet Metal Co., Long Island City, N. Y., general sheet metal contractors, has kept busy installing exhaust systems for removing the refuse taken from old tires prior to retreading. So great has been the demand that this contractor designed a standard unit that includes all essential features. This enables Industrial to assign the four major parts of the complete plant to as many mechanics thus eliminating pattern drafting and places shop work on a production basis.

Referring to this field and its sales potentials P. Fisher, of Industrial, stated that a single tire retreader in nearby Astoria, L. I., handles 80 tires of all sizes daily. For a 300-day year, this totals 24,000 tires. Every day this tire man has to turn away an equal volume of business due to lack of facilities.

Describing briefly the processes involved, Mr. Fisher relates that before the operator can vulcanize on a new tread the old tread must be buffed off. This is effected by means of twin 8-inch, rasp-type buffing wheels. Most of the material removed is coarse par-

ticles, together with considerable larger, heavier pieces, sometimes 1-inch diameter.

In the Industrial Sheet Metal Co. equipped plants,



Side view of new Industrial Sheet Metal Co. shop, Long Island City, N. Y., purchased from four years' profits. A few of an order for 110 14 in., 14 gauge steel smoke stacks awaiting shipment. Each duct, 32 ft. long, weighs 500 lb.

the lighter refuse is removed by a 5-inch suction pipe attached to the rear of the wheel hoods. As the heavier pieces fall to the bottom of the suction hoods they are removed through a second suction duct of the same size. The two pipes join into a single 8-inch duct that joins the exhaust main. The collector, or separator, is of conventional design but the base enters the top of an ash can or other receptacle.

If the refuse is salvaged, as it has been until recently, burlap bags are placed within the ashcan. Not long ago refuse salvage was requested by the Federal Government and brought substantial return for use in reclaimed rubber. This enabled the tire processors to pay for their Industrial exhausters out of return from salvage.

Vulcanizing rooms of such places become unbearably hot, hence the sheet metal contractor sold and installed many exhaust fans for bringing working comfort.

As the name of the contractor indicates, the overwhelming majority of the firm's work has been derived from local factories of which there are a great many here. Shoe, candy, food machinery, printing, are among the general classes of customers for Industrial exhaust systems, spray booths, ventilation, skylights and like work.

It is the firm's experience that fabrication of standard units is a desirable type of sheet metal business if for no other reason than that it reduces drafting, keeps the shop active at all times, permits more economical purchasing of raw materials. An instance of this production idea is the bicycle-type ice cream cart for retail selling by individual caterers or by larger merchants who have bought as many as 12 carts. In this case carts are assigned to individual sellers, the owner collecting a percentage from the returns of the entire group of salesmen. The Industrial Sheet Metal Co. unit is 18-gauge steel. Prior to the war, that is from 1936 to 1941, the contractor made 87 of these carts.

Another specialty in this shop is portable spray

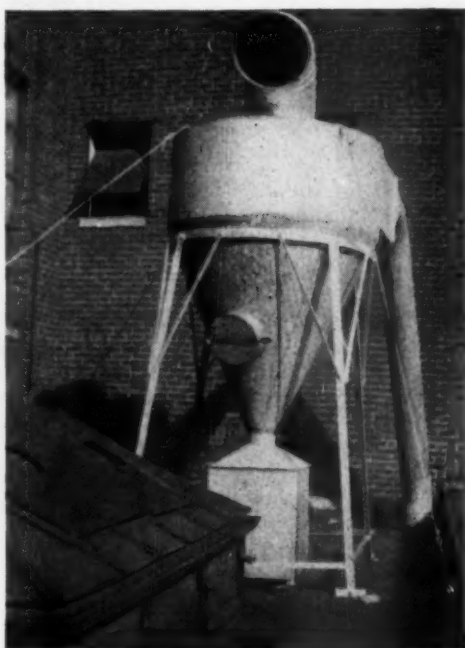


Sample of steel refreshment vehicle, of which 87 were made and sold. One of several specialties of this fabricator.

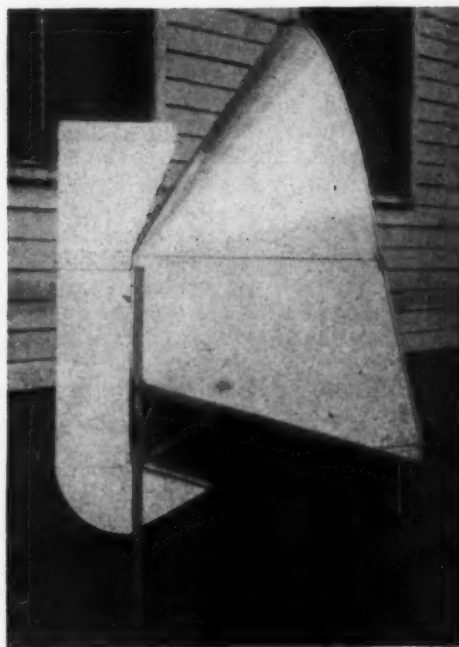
booths for exhausting refuse from latex spraying. Although the call has dwindled due to war conditions, plans are being made to resume production on this item shortly. The Industrial unit is mounted on angle iron legs so that it can be moved to handle various shop operations such, for example, as spraying paint, collecting leather dust in shoe factories, waterproofing clothing by spraying, etc.

This contractor also specializes in the sale and installation of patented dust collectors of magazine and bay types. These collectors have been installed in metallic coating factories, asphalt, food and dairy plants and others.

During the war the shop executed many orders for smoke stacks for camps, ship and general Government building uses. At times this contractor's business has been almost entirely Government work, which has been dispatched quickly and efficiently. The variety of work handled has established the firm as an industrial sheet metal specialist.



Left—Collector and catch box on roof of shoe factory. Owner sells reclaimed leather dust to fertilizer manufacturer. In two years cost of exhaust system thus earned. Right—Portable Latex spray booth and collector. Wide market found among rubberized clothing, shoe, and other trades.



# Heavy Gauge Blow Pipe Fittings\*

## [Double Curved Offset Exhaust Hood]

By William Neubecker

**T**HIS EIGHTH article will cover the pattern developments, for a double curved offset exhaust hood with slip joint arrangement, as shown herewith in the perspective view which has been reproduced from the book *Standard Practice in Sheet Metal Work* on page 504, plate No. 8, published by the National Association Sheet Metal Contractors. Exhaust hoods of this type are usually constructed from No. 20 gauge galvanized sheet iron. If riveted construction is used all laps should be placed on the outside as shown in the perspective view, well riveted and soldered, so as to provide smooth internal surfaces.

### The Problem

The problem presents a double curved offset from a rectangular base to a square to round transition at the top and is developed by the parallel line and triangulation methods as shown on the full page pattern detail Fig. 30. As No. 20 gauge galvanized sheet metal is used whose thickness is 3/80 or practically 1/27 inch, no neutral dimensions need be employed in laying out the various pattern shapes. Regardless what dimensions, height or offset the hood may have, the following rules are applicable.

### Plan and Elevations

As the hood has an offset when viewed in side elevation, but has none when viewed from the front, then only a half plan is required.

First draw the center line shown by  $X-Y$  in plan: Draw the one half rectangular base indicated by  $X-U-V-W$  and lay off the offset of the side of the hood, from  $X$  to the center of the round top shown by  $Z$ , which use as a center to describe the semi-circle shown.

Tangent to this semi-circle, draw the half plan of the square neck. In its proper position at the right of the plan draw the one half front elevation, making the VERTICAL height between the double curves  $X^o-W^o$ , also the VERTICAL height of the transition  $W^o-Y$  as desired. Now in its proper relative position above the half plan, draw the side elevation of the offset including the transition neck as shown by  $A-B-6^o-1^o-1^o-6^o-A$ , making the VERTICAL heights similar to those in the half front elevation to the right of the plan.

Care should be taken to draw graceful easy flowing curves in both elevations, to facilitate suction. Now take a tracing of the one half elevation shown at the right of the plan, and place it in its proper relative

position at the right of the side elevation as shown by  $C-D-1-6$ . This one half front elevation then shows the SIDE PROFILE of the exhaust hood and the side elevation both the FRONT and BACK PROFILES.

### Spacing the Profiles

Space the SIDE PROFILE in the half front elevation in an equal number of divisions as shown by the small figures 1 to 6. Through these divisions draw lines at right angles to  $C-D$  to intersect the VERTICAL LINE  $C-D$ , the BACK PROFILE in the side elevation from  $1^o$  to  $6^o$  and the FRONT PROFILE from  $1^o$  to  $6^o$ . From these profiles the stretchouts will be taken as we proceed to develop the patterns.

### True Lengths for Transition Neck

To avoid a confusion of lines in the lower plan, a half plan has been drawn on the line  $A-B$  above the side elevation. As the conical corners of the transition will be riveted along the center of the quadrant as indicated by the riveted seam at the left, then space the quadrant at the right as shown by the small figures 1 to 3 to 1 from which points draw lines to the corner  $R$  as shown.

Parallel and equal to  $A-6^o$  in side elevation draw the line  $a-b$  at the left. Now take the distances  $R-1$ , 2 and 3 in the half plan above  $A-B$  and set them off from  $a$  in the true lengths as shown by similar numbers, from which points draw lines to the apex  $b$ . Then will  $b-1$ , 2 and 3 be the true lengths of  $R-1$ , 2 and 3 in the quadrant.

### Pattern for the Sides

Take the stretchout of the side profile 1 to 6 in the one half front elevation and place it on the vertical line  $1-6$  at the right as shown by similar numbers. Through these points at right angles to  $1-6$  draw lines indefinitely as shown. Now draw the vertical line  $6^o-1^o$  in the side elevation and measuring from this line take the various projections to points  $1^o$  to  $5^o$  on the FRONT PROFILE and place them to the left of the line  $1-6$  in the side pattern, on the horizontal lines previously drawn through similar numbers and obtain the points of intersections as shown.

In a similar manner measuring from the line  $6^o-1^o$  in the side elevation take the various projections to points  $2^o$  to  $6^o$  on the BACK PROFILE and place them at the right of the line  $1-6$  in the side pattern and obtain the points of intersections shown. Through the intersection so obtained, draw the double curvature at the left from  $E$  to  $6$  and at the right from  $1$  to  $F$ .

\*All rights reserved.

# PATTERNS FOR DOUBLE OFFSET EXHAUST — HOOD RECTANGULAR TO ROUND —

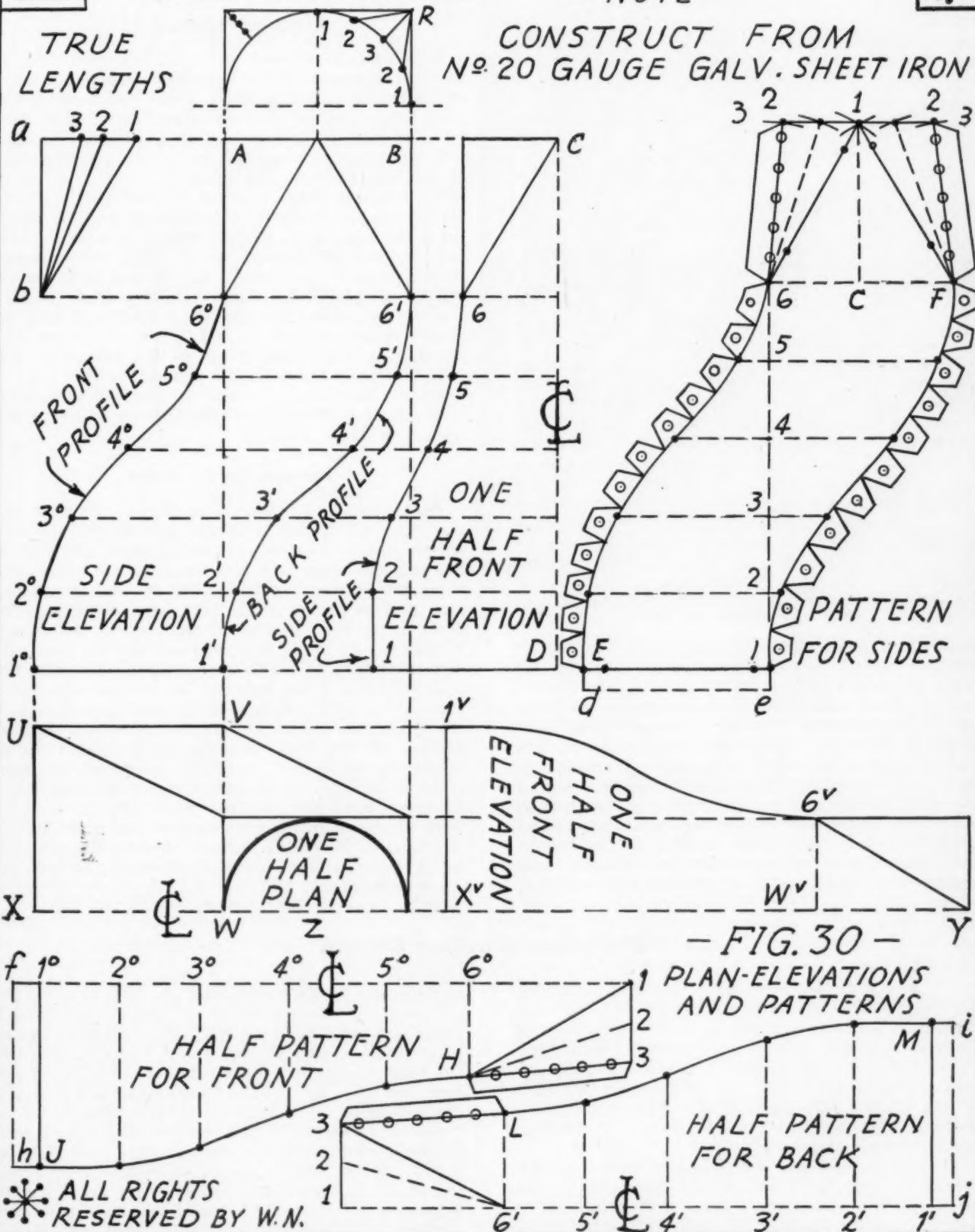
VIII

HALF PLAN ON A-B

— NOTE —



CONSTRUCT FROM  
No 20 GAUGE GALV. SHEET IRON



— FIG. 30 —

Then will *6-E-1-F* be the pattern for both sides of the hood, to which the quarter transition pattern must be added on the line *6-F* as follows.

Take the length of *b-1* in the true length diagram at the left as radius, and using *6* and *F* in the side pattern as centers intersect arcs at *1*. Now with radii equal to *b-2* and *b-3* in the true lengths and using *6* and *F* in the side pattern as centers, describe short arcs on either side as shown by *2* and *3*. Set the dividers equal to the divisions *1* to *2* and *2* to *3* in the quadrant shown in the half plan above *A-B* and starting from point *1* in the side pattern, step to arc *2* and *3* on either side and obtain the intersections as shown, through which trace the upper line. Connect lines to *6* and *F* to complete the one quarter transition pattern.

#### Half Pattern for Front

Take the stretchout of the **FRONT PROFILE** in the side elevation from *1°* to *6°*, being careful to measure each space separately as they are all unequal and place it on the horizontal line *1°* to *6°* at the lower left as shown by similar numbers. Through these points at right angles to *1°-6°* draw lines indefinitely as shown. Now measuring from the line *C-D* in the half front elevation, take the various projections to points *1* to *6* on the **SIDE PROFILE** and set them off on similar numbered lines in the half pattern for front, always measuring in each instance from the line *1°-6°*, and obtain the points of intersections as shown. Trace the double curved line through points so obtained, then will *1°-6°-H-J* be the one half pattern for front.

Now take a tracing of the right side of the transition pattern shown in the side elevation by *1-c-F-2-1* and set the line *1-c* on the line *1-6°* in the half front pattern and obtain the reproduction *1-6°-H-3-1*. Then will *1-1°-J-3-1* be the complete half pattern shape for front of the hood, which is duplicated opposite the line *1-1°* for the full pattern.

#### Half of Pattern for Back

Take the stretchout of the **BACK PROFILE** in the side elevation from *1°* to *6°*, being careful to measure each space separately as they are all unequal, and place it on the horizontal line *1°-6°* at the lower right as shown by similar numbers. Through these points at right angles to *1°-6°* draw lines indefinitely as shown. Now measuring from the line *C-D* in the half front elevation take the various projections to points *1* to *6* in the **SIDE PROFILE** and set them off on similar numbered lines in the half pattern for back, always measuring in each instance from the line *1°-6°* and obtain the points of intersections as shown. Trace the double curved line through points so obtained then will *1°-6°-*

*L-M-1'* be the one half pattern for back. Again take a tracing of the right side of the transition pattern shown in the side elevation by *1-c-F-2-1* and set the line *1-c* on the line *1-6°* in the half back pattern and obtain the reproduction *1-6°-L-3-1*. Then will *1-1'-M-3-1* be the complete half pattern shape for the back of the hood, which is duplicated opposite the line *1-1'* for the full pattern.

#### Laps for Riveting

Laps must be allowed and rivet holes punched on the conical seams of the transition pieces, as shown on the patterns for the sides, front and back. These rivet holes must be carefully spaced on all three patterns, so that the holes will coincide with one another without reaming. Along the curvatures on both sides of the **SIDE PATTERN** laps must be allowed and rivet holes punched. These punched notched laps are bent at the required angles and fitted over the **OUTSIDE** of the front and back, (after forming) the holes carefully marked and punched so that they will coincide when the hood is assembled and riveted as shown in the perspective view. A lap is also allowed at the bottom of the pattern for the sides, front and back as shown respectively by *d-e*, *f-h* and *i-j* to receive the rectangular band iron frame at the bottom of the hood as clearly shown in the perspective view. If the band iron frame is to be entirely inclosed with sheet metal, then sufficient material must be added to the lower end of all patterns.

#### Forming Up the Hood

When forming up the various sides of the hood, use the "slip roll formers" always holding the top and bottom lines of the patterns **PARALLEL** to the rolls in forming the upper and lower curves. The sides patterns are formed right and left to conform to the **SIDE PROFILE** shown in the half front elevation. The front pattern is formed to conform to the **FRONT PROFILE** shown in the side elevation and the back pattern to conform to the **BACK PROFILE** also shown in the side elevation. When forming the transition patterns make a very slight **CREASE** on the solid lines shown in the transition patterns, then round out the conical corners so that they represent parts of true cones. When the entire hood has been assembled, an extra collar is attached to the upper part of the transition, so as to make the telescope joint into the exhaust pipe, as shown in the perspective view, which allows the hood to be raised or lowered with the attached pulley arrangement and also allows rapid removal when necessary.

### OPA's Construction Ceiling

**T**HE OPA's proposal to set a price ceiling on every new house (AA, Sept., page 69), has been termed unworkable, dangerous, and unnecessary by Douglas Whitlock, testifying before the Stewart subcommittee of the Senate small business committee and speaking in behalf of both the Chamber of Commerce of the United States and the Producers' Council, a national organization of manufacturers of building materials and equipment.

"If anyone seriously contends that such a plan is workable," said Mr. Whitlock, "let him explain where he would find within the federal government an organization large enough and sufficiently experienced

to undertake such a tremendous job. Where would the OPA, or any other government agency, find enough competent individuals to establish individual ceiling prices for a million homes a year? Think of the careful, painstaking study that would have to be devoted to each individual set of plans before a fair and equitable price could be set! Think of the time that would be required to ascertain the relative efficiency of each builder's own particular organization. Think what would happen, once a ceiling price had been established, if it were found necessary to grant higher prices for one or two or more of the major materials utilized, or if increased wage rates went into effect."

# Safety Factors in Arc Welding

By R. F. Wyer

Application Engineer  
Electric Welding Division  
General Electric Company

**T**HERE is one peculiarity which distinguishes the arc welding operator's job from other occupations—arc welding is the only widely practiced industrial occupation in which the operator handles a live electric circuit all day. Yet, in spite of all the implications of that fact, the danger of electric shock to the operator is not as great as is often supposed. It is proposed here to discuss safety factors in arc welding from the electrical point of view.

Radiation of ultra-violet and infra-red wave lengths from the arc are sometimes regarded as serious hazards. They are not, in the sense that their effects can easily be prevented by commonly used protective helmets and clothing. Mystery rays are not present, although it is surprising how many times the humor crops up that this or that arc welding equipment gives off radiations which result in sterility or peculiar ailments such as might be attributed to X-rays. Our own plant in Schenectady has effectively disposed of such rumors by having welding operators carry in their clothing pieces of photographic film for weeks at a time. None showed the slightest evidence of radiation.

Thus, the hazard of electric shock is probably of greatest interest from the arc welding point of view. It seems worth while to discuss it in considerable detail, because it is not as common a source of injury



Fig. 1—Dangerous welding practices. This operator is using an uninsulated electrode holder, and the cables coiled carelessly under his feet and legs may trip him.

or death as might be supposed from casual acquaintance with the subject, and because there are definite ways in which even the small hazard can be almost completely overcome.

It is difficult to study fatalities to welding operators from electric shock.

One insurance company reported that among one group of policyholders, electric shock was the least frequent cause of occupational death classified—fewer deaths being attributed to shock than to falls, machinery, railroads, or even drowning. In a survey made among four manufacturers using arc welding, selected at random, these figures were obtained for the year 1941: There were a total of 14,475 industrial workers employed by the four manufacturers, with a total of 13 fatalities, or one death per 1110 workers. Included in these totals were 1125 arc welders, among whom there was one fatality.

Our own plants have for many years employed arc welders, with as many as 1500 welding operators employed at one time before the peak in this employment. Yet in the last seven years there has been but one fatal accident to a welding operator. This one was in 1938, and there is considerable doubt as to whether death was caused by electrocution or by a fall.

While no figures on the total employment of arc welding operators are available, a conservative esti-



Fig. 2—Dangerous welding practice. Arc welding operator should never sling electrode holder over his shoulder nor leave an electrode in a holder not in use.

mate based on industry sales of arc welding equipment and on the consumption of electrodes gives a figure well over 200,000 for the year 1943. So far as we know there were only four electrocutions among arc welding operators during the entire year 1943.

The shock hazards which do exist might be classified as to their relationship to equipment and its layout, maintenance, supervision, and operator education.

One perpetual question is the relative hazard in a-c and d-c welding. Here there is at times a potential of 300 volts between the two slender electrodes. It is alternating-current. No case of severe shock, and no fatalities resulting from the use of this equipment, have ever come to our attention.

Exhaustive studies on "let-go" currents, made at the University of California, definitely prove that under laboratory conditions, a victim is less likely to freeze onto an electrode with d-c than with a-c, at a given current in milliamperes. But to draw the conclusion that d-c welding is invariably safer than a-c welding is to ignore the factors of voltage, insulation, protective equipment, skin resistance, and physical condition of the subject.

#### Ground Welding Set Frame

With respect to the installation of arc welding equipment, the major safety point is the necessity of grounding the frame of the welding set, regardless of whether it is an a-c or d-c unit, or whether it is stationary or portable. Common sense, as well as the

National Electrical Code, demand that this should be done. An ungrounded unit, even one in perfect condition, can give annoying shocks and tickles to a grounded individual, because of the inherent ability of an electrical circuit to induce a static charge on another conductor separated from it by insulation.

In the event of failure of the insulation, due to age, abuse, or accident, the frame of a unit may become charged to full power circuit voltage, with serious consequences, unless the frame is grounded. If the proper ground connection is in place, however, the frame cannot have a voltage to ground, and the only effect of such a failure will be the blowing of fuses or tripping of circuit breakers and disconnection of the unit from the line.

#### Overcurrent Protection Needed

This immediately suggests the necessity of installing adequate overcurrent protection and switches in the power circuit to the welder. Fuses or circuit breakers must be capable of interrupting the maximum current which may be drawn by a short circuit in the motor or power leads of a d-c welder, or in the primary circuit of an a-c welder. Disconnecting switches must be capable of interrupting the stalled rotor current of the d-c machine, or the maximum current which can be drawn by the a-c unit when the welding electrode is short-circuited on the work.

On the welding-circuit side of a unit, care should be taken to avoid the possibility of getting double the normal circuit voltage between two adjacent welding circuits, because of the connection of one unit with one polarity, and the other with opposite polarity. On a-c units, abnormal voltage of somewhat lower value can also be obtained if adjacent welders are operated from different phases of the supply line. This factor has rarely, if ever, caused serious trouble because of the small likelihood that an operator will get hold of two welding circuits at once.

Probably the most important item in equipment, from the safety point of view, is the electrode holder. Although uninsulated holders have been used in arc welding for many years, good practice unquestionably requires that fully insulated holders should be used.



Fig. 3—Dangerous welding practice. The insulation of this electrode holder is broken.

Fig 1 not only shows an uninsulated electrode holder, but incidentally, an ideal set-up for potential trouble. The operator is in a cramped space, and also undoubtedly in contact with the conducting metal in a number of places on his body, unless his clothing is dry and his shoes free from nails. In his hand he holds an electrode holder which has a handle of insulating material, but through which extends an uninsulated screw-head. Probably any contact he might make with the screw, through wet gloves or with the bare hand, would be too small in area to permit electrocution. But a shock may make him do something involuntarily, which will put him in danger. The worst feature of this holder is that the head, projecting out beyond the ring or collar of insulating material just above the hand, is entirely uninsulated. Each time the operator changes welding electrodes, there is a good chance that he will contact this exposed metal. If he should fall on the holder, or sling the cable over his shoulder or around his neck, as is frequently done (Fig. 2) this live conductor may contact his chest or back.

### Use Insulated Holders

There are now several types of good insulated electrode holders on the market. They should be used on any welding job, and their insulation should be kept in first-class condition. Studies of accident reports reveal, in a good percentage of cases, evidence that uninsulated electrode holders caused or contributed to death. (Fig. 3) Welding cables and their connectors should be examined frequently for breaks in insulation. The extremely hard service to which welding cables are subjected often results in severe damage to the insulation. Yet the welding operator, accustomed to arcs and sparks in his daily work, often dis-

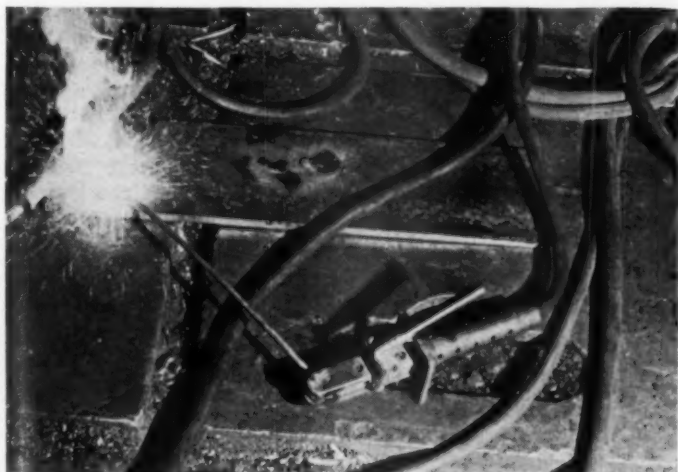


Fig. 4—Dangerous welding practice. Electrode holder should never be thrown or placed where it can make contact with conducting material.

regards accidental short circuits which spell trouble to the safety man or the fire inspector.

### Watch Hot, Wet Weather

The paramount warning should be to take particular care in hot and humid weather, and when welding in wet places. Almost without exception, fatal accidents to welders occur in hot weather. The operator's own condition and that of his clothing should be his guide. He should always guard against wet gloves, shoes, and



Fig. 5—Dangerous welding practice. Arc welding operator should be particularly careful when working above the ground or floor, since many fatalities are caused by falling.

clothing, particularly clothing made of thin cotton fabrics.

He should learn to carry an electrode holder by the handle, never slung over his shoulder, or squeezed under his arm.

He should never, under any circumstances, transport an electrode holder with an electrode or electrode stub in it.

He should never throw or lay an electrode holder down so that it makes contact with any conducting material. (Fig. 4)

He should never work alone in confined or concealed spaces where, for example, striking his head may cause temporary loss of his faculties.

He should be particularly careful when working above the ground or floor, since it is significant that many fatalities involve a fall. (Fig. 5)

### Case Studies Give Proof

Case studies, incomplete as they usually are, give a basis for these recommendations. For example, in all but one of nine reports of accidents, dating from 1934 to 1943, the statement was made that the weather was very hot, or that the victim's clothing was soaking wet. In five of these nine cases, a fall was involved, ranging from a height of eleven feet to the case of a standing man who fell to a steel floor. In every one of them, the electrode holder was uninsulated, and in none was there evidence of contact with any live part other than the electrode holder. Four of the cases involved arc welding operators working in confined spaces.



Magnesium grinding requires a unit type wet collector located directly behind the grinding stand.

**E**XHAUST system hoods should be placed as close to the source of dust or fumes as possible, with due regard to the movements of the operator. When the hood must be placed at some distance above the machine, it should be built large enough to take care of the diffusion of the material which is usually quite rapid. For those substances which are lighter than air, the hood should be over or above the machine, and where a heavy vapor or dust-laden air at ordinary temperature is to be removed, horizontal or down-flow-type hoods should be used. The objective to keep in mind in all cases is to take advantage of the natural tendency of the material to move upward or downward.

#### **Suction and Velocity Requirements**

The removal of dusts or fumes by means of exhaust hoods requires a movement of air at the point of origin sufficient to carry them to a collecting system. The air velocities necessary to accomplish this depend upon the physical properties of the material to be eliminated and the direction and speed with which it is thrown off. If the dust to be removed is already in motion, as is the case with high-speed grinding wheels, the hood should be installed in the path of the particles so that a minimum air volume may be used effectively. It is always desirable to design and locate a hood so that the volume of air necessary to produce results is as small as possible.

The static suction at the throat of a hood is frequently used in practice as a measure of the effectiveness of control. This is of considerable value where exhaust systems adapted to particular operations have been standardized by practice. It must be remembered, however, that the suction is only a rough measure of the air volume handled and consequently of the air velocity at the opening of the hood. The elimination of any dusty condition requires added information concerning the shape, size, and location of

## *Design of Exhaust Hoods \**

the hood used with regard to the operation in question.

In some states, grinding, polishing, and buffing wheels are subject to regulation by codes. The static suction requirements, which range from  $1\frac{1}{2}$  to 5 inches water displacement in a U-tube, should be followed although in several instances they may appear to be very high. Frequently, in these operations, a large part of the wheel must be exposed and the dust-laden air within the hood is thrown outward by the centrifugal action of the wheel, thus counteracting useful inward draft. This tendency may be diminished by locating the connecting duct so as to create an air flow of not less than 200 fpm about the lower rim of the wheel.

Exact determinations of hood control velocities are not available, but it is safe to assume that for most dusty operations they should not be less than 200 fpm at the point of dust origin. The method for approximately determining these velocities in terms of the velocity at the hood opening is given below.

#### **Hoods**

No set rule can be given regarding the shape of a hood for a particular operation, but it is well to remember that its essential function is to create an adequate velocity distribution. The fact that the zone of greatest effectiveness does not extend laterally from the edges of the opening may frequently be utilized in estimating the size of hood required. Where complete enclosure of a dusty operation is contemplated, it is desirable to leave enough free space to equal the area of the connecting duct. Hoods for grinding, polishing, and buffing should fit closely, but at the same time should provide an easy means for changing the wheels.

*\*Part 4 in the series issued as Bulletin No. 2, under the auspices of the Preventive Engineering Committee, Air Hygiene Foundation of America, Inc.*

It is advisable to design these hoods with a removable hopper at the base to capture the heavy dusts and articles dropped by the operator. Such provisions are of assistance in keeping the ducts clear. Air volumes used to control many dust discharges may often be reduced by effective baffling or partial enclosure of an operation. This procedure is strongly urged where dusts are directed beyond the zone of influence of the hood.

#### Axial Velocity Formula for Hoods

When the normal flow of air into a hood is unobstructed, the following formula may be used to determine the air velocity at any point along the axis:

$$V = \frac{0.1 Q}{x^2 + 0.1 A} \quad \dots\dots\dots (1)$$

where

- V = velocity at point, feet per minute.
- A = area of opening, square feet.
- x = distance along axis, feet.
- Q = volume of air handled, cubic feet per minute.

#### Velocity Contours

The air velocity distribution in front of a hood can be expressed in terms of the velocity at the opening. Curves of equal velocity are called velocity contours and these curves are identical for similar hood shapes when the hoods are reduced to the same basis of comparison. These facts apply to all hoods so that when the velocity distribution is known, the air flow required at a given point can be determined. Figure 1 shows the contour distribution in two axial planes perpendicular to the sides of a rectangular hood with

a side ratio of one-half. The distribution shown is identical for all openings with a similar side ratio provided the mapping is as shown in Figure 1. The contours, of course are expressed as percentages of the velocity at the opening.

#### Air Flow from Static Readings

The volume of air flow through any hood may be determined from the following equation:

$$Q = 4005 f a \sqrt{h_t} \quad \dots\dots\dots (2)$$

where

- Q = volume of air flow, cubic feet per minute.
- a = area of connecting duct, square feet.
- $h_t$  = static suction at throat of hood, inches of water.
- f = orifice or restriction coefficient which varies from 0.6 to 0.9 depending on the shape of the hood.

An average value of f is 0.71, although for a shaped opening a value of 0.8 may be used.

Static suction is not a good measure of the effectiveness of a hood unless the area of the opening and the location of the operation with respect to the hood are known. This is clearly indicated by Equation 1 which shows that the velocity at any point along the axis varies inversely as the area of the opening plus the square of the distance. However, this formula coupled with Equation 2 should serve to indicate the velocity conditions to be expected when operations are conducted external to the hood opening.

#### Control Velocities

Little is known of the velocities required for the control of a nuisance. Many factors, such as the man-

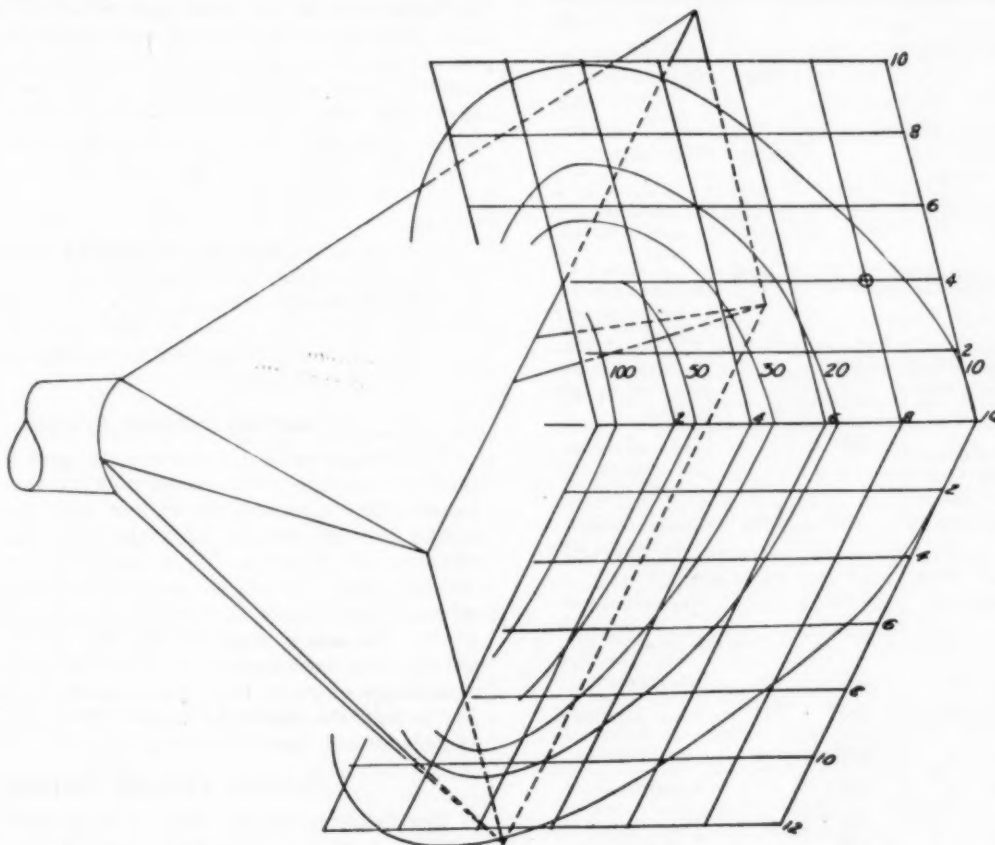


Figure 1. Velocity contours for a rectangular opening whose ratio of sides is 1 to 2. Contours are expressed as percentages of the velocity at the opening.

ner of nuisance production, material to be controlled, and the velocity and direction with which the material is projected from the source, influence the determination of these velocities. Tables 1 and 2 give the air velocities generally used for control purposes in several industries.

### Large Open Hoods

Large hoods, such as are used for electroplating and pickling tanks, should be subdivided so the area of the connecting duct is not less than one-fifteenth of the open area of the hood. Frequently, it will be found necessary to branch the main duct in order to obtain a uniform distribution of flow. Canopy hoods should extend six inches laterally from the tank for every twelve-inch elevation, and wherever possible they should have side and rear aprons so as to prevent short-circuiting of air from spaces not directly over the vats or tanks. In most cases, hoods of this type

Table 1.—Minimum Air Velocities Required to Capture Certain Industrial Dusts

INDUSTRY	PROCESS	REQUIRED AIR VELOCITY		CRITERION
		At Point of Origin	At Face of Hood	
Granite cutting	Hand pneumatic tool	200 FPM		Reduced concentration to safe level
	Surfacing machine	1500 FPM		Reduced concentration to safe level
	All tools		1500	Reduced concentration to safe level
Grain elevators	Elevator boot and head, garner		500	Visual test
Paint spraying	Spraying booth		50-200	Reduced concentration to safe level
Sand pulverizing	Bagging machine	400-FPM		Reduced concentration to safe level
Quarrying and mining	Horizontal drilling with Kelly trap	60*		Reduced concentration to safe level
	Vertical drilling with Kelly trap	200*		Reduced concentration to safe level
Electroplating	Chromium plating	50**	1500	Reduced concentration to safe level
	Steam and acid tanks	75-100		Reduced concentration to safe level
	Brushing	200*		Usual practice
Hatters fur	Cutting machines	380*		Usual practice
	Blowers	2000*		Usual practice
Electric welding	Welding	200		Visual test
Metal spraying***	Lead	200		Effective removal of all fumes
	Zinc	125		

\*Cubic feet per minute.

\*\*Cubic feet per minute per foot of slot (common practice).

\*\*\*At opening of booth.

Table 2.—Minimum Air Velocities Required to Capture Certain Foundry Dusts\*

PROCESS	AIR VOLUMES	REMARKS
Foundry shakeout		
Overhead hood	300 cfm/sq. ft. of working openings	Hot castings
Overhead hood	200 cfm/sq. ft. of gross grate area	Hot castings
Overhead hood	200 cfm/sq. ft. of working openings	Warm or cold castings
Overhead hood	150 cfm/sq. ft. of gross grate area	Warm or cold castings
Side Hood	400 cfm/sq. ft. of gross grate area	Hot castings
Side Hood	300 cfm/sq. ft. of gross grate area	Warm or cold castings
Down draft Sand Screens	200 cfm/sq. ft. of gross grate area	Warm or cold castings
Flat deck type	75 cubic feet/minute per square foot of screen area, but not less than 200 feet per minute through inspection openings	
Cylindrical	1500 cfm 2000 cfm 3000 cfm 4000 cfm 5000 cfm	30" diam. 30-48" diam. 48-60" diam. 60-72" diam. Over 72" diam.

\*From article by John M. Kane, in The Foundry, January-February, 1938.

take advantage of the natural tendency of the vapors to rise, and air velocities may be kept low. Cross drafts from open doors or windows disturb the rise of the vapors and therefore provision must be made for them. The air velocities required also depend upon the character of the vapors given off, cyanide fumes, for example, requiring an air velocity of approximately 75 fpm on the surface of the tank, and acid and steam vapors requiring velocities as low as 25 to 50 fpm. The total volume of air flow necessary to obtain these velocities may be approximately determined from the following simple formula:

$$Q=1.4 P D V \dots\dots\dots (3)$$

where

Q = total volume of air handled by hood, cfm.

P = perimeter of the tank, feet.

D = distance between tank and hood opening, feet.

V = air velocity desired along edges and surfaces of tank, fpm.

### Lateral Exhaust System

The lateral exhaust method, as used for chromium plating tanks, is often preferred to the canopy-type hoods. This method draws air and fumes laterally across the top of vats or tanks into slotted ducts at the top and extends fully along one or more sides of the tanks. The slots are two inches wide and for effective ventilation a 2,000 fpm exhaust air velocity at the slot face is advisable. In addition, the duct should not be required to draw the air laterally for a distance of more than eighteen inches and the level of the solution should be kept six to eight inches below the top of the tanks.

### Flexible Exhaust System

The flexible exhaust tube method may be advantageously used for removing dust or fumes. Flexible tubes having one end connected to an exhaust system and a slotted hood attached to the other end may be

(Continued on page 192)

Certain

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SECTION



**T**HE purpose of soldering is to join separate pieces of metal together, and in that sense soldering is a similar operation to welding and brazing. Soft-soldering is, however, carried out at much lower temperatures than either welding or brazing and thus has a more universal and wider field of use because less complicated and expensive equipment may be required, and there is much less danger of thermal injury to the components being joined. In welding, the junction is effected by actually melting the surfaces of the pieces to be joined in the neighborhood of the joint, but in soldering the basis metal is not melted, and with the lower temperatures involved this constitutes the major point of difference between welding and soldering.

Solder sticks metals together by filling the joint spaces with a metallic substance that adheres tightly to the members of the joint. Most solders are essentially alloys of the metals tin and lead, and adhesion results from the fact that tin has the property of reacting with most common metals at temperatures well below their melting points and forming with them inter-metallic compounds, which grow out from the surface of the metal and are tightly joined to it.

If a soldered joint is examined under the microscope it will be observed that between the solder and the basis metal there is a thin film or lamina of a material which is neither solder nor basis metal, but a compound which has been formed between the two. The junction between solder and steel, for example, consists of a layer of iron-tin compound lying be-

*\*From a paper, "Solders and Soldering Practice," in the December, 1943, issue of Sheet Metal Industries (British). Reprinted by permission.*

AMERICAN ARTISAN, October-November, 1945  
SHEET METAL SECTION

## Low Tin Content Solder\*

This article does not add much to our present knowledge of war time soldering problems, but the text does explain the differences between pre-war and war solder; between different pre-war solders; and gives some quick rules for satisfactory soldering with the solder available today. The tables of characteristics are useful.

tween the iron and the solder. With copper, copper-tin compounds are formed in a similar way.

This explanation makes it clear that solder does not join metals together strongly by simply keying into such chance surface roughnesses as may be present; the adhesion results from the fact that the tin in the solder has the property of reacting with the metal to form a new body. Coupled with its low melting point, this property of tin makes it an unique and widely used jointing material. Although certain other metals such as zinc, silver and cadmium may be used as the operative or joint-forming constituent of solders, their use is found to become prominent and widespread due to special or non-technical considerations, such as the present tin shortage.

### Composition of Solder

Basically, the commonly used solders are simply alloys of tin and lead. Thus, for example, plumbers' solder contains 30 per cent tin and 70 per cent lead; tinman's solder contains equal proportions of tin and lead. The lead is in one sense a diluent for tin because it is considerably cheaper, but it is a diluent of special and useful characteristics. Thus, if tin and lead are mixed together in certain proportions, the melting points of the alloys formed are lower than those of either pure tin or pure lead. A low melting point is generally an important and desirable property in solders. Moreover, alloys of tin and lead are usually stronger mechanically than the pure metals. Again, by arranging the proportions of tin and lead it is possible to produce alloys with a pasty range, a term which indicates that at certain temperatures the alloy is partly liquid and partly solid—a characteristic which makes possible the production of wiped joints and soldered patches and fillets.

Many solders nowadays contain small proportions of elements other than tin and lead, the most common of these being antimony and silver. These additions are valuable in that such necessary properties as fluidity and low melting point are obtained with a

slightly smaller tin content. The use of these solders has, of course, received a good deal of attention recently due to the current shortage of tin.

### **Properties and Grades of Solder**

It will be clear that two of the most immediately interesting characteristics of a solder alloy are its melting point and its capacity to react with and "wet" the joint surfaces. According to the ratio of tin to lead and to the presence or absence of small quantities of other alloying elements, melting points of the soft solders range from a minimum of 183° C. to a maximum of something over 300° C. (The melting point of pure lead is 327° C.) Tin and lead are completely mutually soluble in the liquid state but only partially soluble in each other in the solid state, and they form what is called a eutectiferous system of alloys.

This means that a certain alloy, actually 62 per cent tin and 38 per cent lead, will, when cooled from the molten condition, solidify sharply at a single temperature just in the same way as a pure metal does. The alloy of this particular composition is known as eutectic solder. When the tin and lead are alloyed in any other ratio than 62:38 the solder does not melt or solidify at a single temperature, but over a range of temperature called the pasty range or mush range. As an example, an alloy containing 30 per cent tin and 70 per cent lead starts to melt at 183° C., but is not completely fluid until a temperature of 257° C. is reached. Between these two temperatures the alloy is partly solid and partly liquid. This pasty range is taken advantage of in the preparation of plumbers' wiped joints.

Knowledge of this property of the solder alloys is of practical importance, since in using solders with an extended freezing range care must be taken that no strain is placed on the joint until the solder is completely solid. Casual inspection may indicate that a joint is solid when in fact it comprises a mass of solid metal crystals surrounded by a still-liquid residuum of eutectic. In this condition the solder has no mechanical strength and the slightest jerk or stress will cause disruption of the joint.



Moreover, even when the solder is completely solid, its full strength is not developed until it has cooled to a temperature considerably below its final solidification point. Thus it has been shown that a 50:50 tin-lead solder has approximately only one-half its cold strength at a temperature of 150° C., although this temperature is 33° C. below the temperature at which it became completely solid. Where especially good strength at high temperatures is required, solders containing either high-tin content or high-lead content are used, the melting range of such extreme compositions being considerably higher than that of the more commonly used intermediate compositions. Currently, lead-rich solders are mostly used for high-temperature applications, since the use of high-tin solders is restricted, due to the tin shortage.

### **Strength Properties**

At ordinary temperatures the shear strength of the tin-lead alloys is greater than that of either of the single pure metals. Maximum strength is developed at around the eutectic composition; thus in round figures the shear strength of tin is just over one ton per square inch and the shear strength of lead is just under one ton; 60 tin:40 lead has a shear strength of over 3 tons per square inch and it may be added that most common solders have a strength of over 2 tons. Hardness of the solder is considerably higher than that of either tin or lead; impact value is equal to or better than pure tin and considerably in excess of the relatively low impact strength of lead.

### **Antimony in Solders**

In the B. S. specification for soft solders there were prior to the emergency revision of 1942 twelve grades of solder, which, together with certain recognized special solders, provided a good range of properties to cover existing technical and economic requirements. Seven of the twelve B. S. grades were essentially simple alloys of tin and lead; the other five were antimonial solders, or in other words, alloys of tin and lead to which was added a small proportion of antimony.

Antimony is introduced into solders because it is less expensive than tin and can, to a strictly limited extent, be used as a substitute for it. The limit is set by the fact that if antimony is added in excess of 6 per cent of the tin content of the solder, it separates out in the form of hard, brittle compounds which render the solder quite useless. As an example, in a solder containing 50 per cent of tin it is admissible to add 6 per cent of 50, or 3 per cent of antimony. As the tin content is decreased, so must the antimony addition be proportionately decreased. Added in these correct and limited amounts, antimony confers the benefit of slightly lower liquidus temperature for the same tin content. In certain applications, however, the use of antimonial solders is contraindicated, as for example, in the soldering of zinc, galvanised and cadmium-plated components, and for certain electrical jointing work.

### **Solders and Tin Economy**

In normal years solders used to absorb about 30,000 tons of tin annually and the loss to the Allied Nations of major tin-producing areas of the Far East posed a difficult technological problem to solder manufacturers and users, particularly in view of the multitude and variety of the uses of solder. It was fortunate that there existed a fairly sound foundation of scientific knowledge on which economy measures could be based, and manufacturers, users and scientific

staffs are deserving of tribute for the way in which the difficulties were tackled.

The problem was approached by the four avenues of elimination, use of lower tin-content solders, use of substitute solders containing little or no tin, and, lastly, the study of actual soldering operations to secure reduction in the amount of solder used per joint.

The possibilities of securing economy by using solders of lowered tin content was studied by a committee of the British Standards Institution, and a war emergency specification was issued in which the number of grades of solder was reduced to five, with a maximum tin content of 45 per cent. The emergency grades are as follows:—

**Grade M.**—45 per cent. tin-content antimonial solder for special tinsmiths work such as the hand-soldering of long seams and fine work: melting range 185° C. to 215° C.

**Grade G.**—42 per cent. tin-content non-antimonial solder for electrical work and soldering zinc and galvanised surfaces: melting range 183° C. to 230° C.

**Grade C.**—40 per cent. tin-content antimonial solder for general tinsmiths work, coppersmiths fine work: melting range 185° C. to 227° C.

**Grade D.**—30 per cent. tin-content antimonial wiping solder for wiped cable and pipe joints: melting range 185° C. to 248° C.

**Grade N.**—18.5 per cent. tin-content antimonial dipping solder for radiator work, dip soldering, hot-tinning, etc.: melting range 185° C. to 275° C.

It will be clear that reduction of the tin content of a solder will push up its melting temperature and also reduce, to some extent at least, its joint-forming capacity. Thus replacement of higher tin solders by economy grades must usually entail practical modifications to technique in order to secure equivalent performance.

### Manipulative Technique

The actual manipulative technique employed by the operator is frequently susceptible to slight and simple alterations which will facilitate the use of solders of lower tin content. In peaceful times, many soldering difficulties were readily eased or overcome by using solders of high or relatively high tin content, and it must be borne in mind that, consequently, the techniques which became generally established were well suited to such solders. Nowadays such attractive alloys are only allowed for very special and critical tasks and difficulties which would have been solved by stepping up the tin content must be resolved in other ways.

A simple example of modified technique is the use of solder in lighter sections than the commonly-used 1-lb. stick. Solder in the form of blowpipe strip, or better still as a wire, will often result in surprising economies in consumption as the light section will melt more quickly and demand less heat from the iron. The wider use of cored solder is another example.

Attention to manipulative detail and to the cleanliness and general preparation of the joint are often helpful in facilitating the use of economy solders, but in the author's experience the most important requirement is to secure higher working temperatures, as by the use of higher bit-temperature, iron pre-heating devices, and so on. As an example, reduction of tin content from 60 per cent. to 42 per cent. means an increase in melting temperature of over 40° C.,

and in order that this degree of economy shall be effectively made, the primary requirement is that an increase of the order of 40° C. in the steady working bit temperature be provided for. Similar considerations apply to machine-soldering and dip-soldering operations. It may be pointed out that a joint or assembly may actually be overheated by using an iron of too low a bit temperature, due to prolongation of the time required to make the joint. The following table, proposed by R. Arbib\* gives a useful guide to bit temperatures required for some economy grades of cored solder:—

ALLOY		Melting Range °C.	Bit Temperature °C.
Tin.	Lead.		
Per Cent	Per Cent.		
45	55	183-227	267
40	60	183-238	278
30	70	183-257	297
18.5	81.5	187-277	317

### Substitute Solders

Restriction of the use of the higher tin content standard grades is only part of the story of economy solders, and useful savings have been made by the use of lead-base lead-silver solders, low tin-high antimony solders and the "Argent" solders.

"Argent" solders are tin-lead or tin-lead-antimony alloys with a small but carefully adjusted addition of silver. The desirable properties conferred on the alloys by the addition of silver enable worthwhile economies in tin to be made without any great or inconvenient alteration to the general technique of the operation. Some examples of "Argent" solders are given in the table below:—

Name.	ALLOY.				Melting Range °C.
	Tin.	Lead.	Silver.	Anti-mony.	
T.380	38	Remainder	1.15	—	178-234
Q.380	38		1.22	1.7	180-227
Q.330	33		0.90	1.7	180-238
T.300	30		0.63	—	178-251
Q.200	20		0.43	1.01	180-266

High-lead solders are attractive from the economy point of view, and it is established that with proper care good strong joints may be obtained with such alloys. They are used with success where provision can be and is made for the much higher working temperatures necessary and where the use of active fluxes is admissible.

The lead-base solders are typified by alloys containing 90 to 97.5 per cent. lead, silver up to 2.5 per cent. and tin up to 5 per cent. the most widely used alloy being the simple lead-silver alloy containing 97.5 per cent. lead and 2.5 per cent. silver. The outstanding use of this alloy has been in the high-speed machine-soldering of tinplate food-can cylinders.

Another series of high-lead alloys is formed by the "T.M." solders which have compared with normal alloys, a relatively low tin content and high antimony. Their working temperatures lie about midway between the tin-lead solders and the lead-silver solders, and their major application has been in the soldering of ferrous metals such as tinplate and terneplate.

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Baltimore 3, Md.  
Phone: Gilmore 0222  
Teletype: BA 164

**DALLAS DIVISION**  
2200 No. Natchez Avenue  
Chicago 35, Ill.  
Phone: Merrimac 2600  
Teletype: CG 957

**NEW BEDFORD DIVISION**  
24 North Front Street  
New Bedford, Mass.  
Phone: New Bedford 8-5601  
Teletype: NB 87

**CHICAGO MANUFACTURING DIVISION**  
2200 No. Natchez Avenue  
Chicago 35, Ill.  
Phone: Merrimac 2600  
Teletype: CG 957

**ROME MANUFACTURING COMPANY DIVISION**  
Rome, New York  
Phone: Rome 2800  
Teletype: ROME NY 449

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140 Federal Street  
Phone: Hubbard 7190

**BUFFALO 7, N. Y.**  
1807 Elmwood Avenue  
Phone: Delaware 7616

**CINCINNATI 2, OHIO**  
Carew Tower  
Phone: Main 0130  
Teletype: CI 171

**CLEVELAND 15, OHIO**  
Midland Bldg.  
Phone: Cherry 3930  
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**DALLAS 1, TEXAS**  
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Phone: Central 8681  
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**GRAND RAPIDS 2, MICH.**  
Keeler Building  
Phone: Grand Rapids 8-0511 & 6-1314  
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410 Asylum Street  
Phone: Hartford 2-3828  
Teletype: HF 87

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Circle Tower  
Phone: Market 1908

**LOS ANGELES 15, CALIF.**  
714 W. Olympic Blvd.  
Phone: Richmond 9314

**MILWAUKEE 2, WIS.**  
626 E. Wisconsin Avenue  
Phone: Marquette 1440  
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Metropolitan Bldg.  
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New York Central Bldg.  
75 East 45th Street  
Phone: Murray Hill 9-6800  
Teletype: NY 1-1222

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Keystone—Race 1847  
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**PITTSBURGH 19, PA.**  
Gulf Bldg.  
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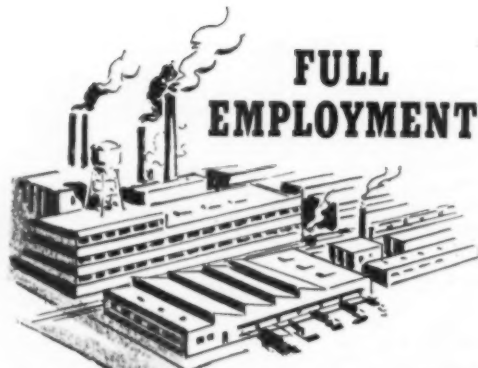
**PROVIDENCE 3, R. I.**  
Industrial Trust Bldg.  
Phone: Gaspee 8110

**ST. LOUIS 1, MO.**  
Telephone Bldg.  
1010 Pine Street  
Phone: Garfield 4416  
Teletype: SL 191

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When we saw the stop sign — the same know how that directed us in war production guided us through reconversion at top speed, to the main artery of consumer production.

Now our expanded facilities and capacity are devoted for building machines for peace — better and faster than ever.

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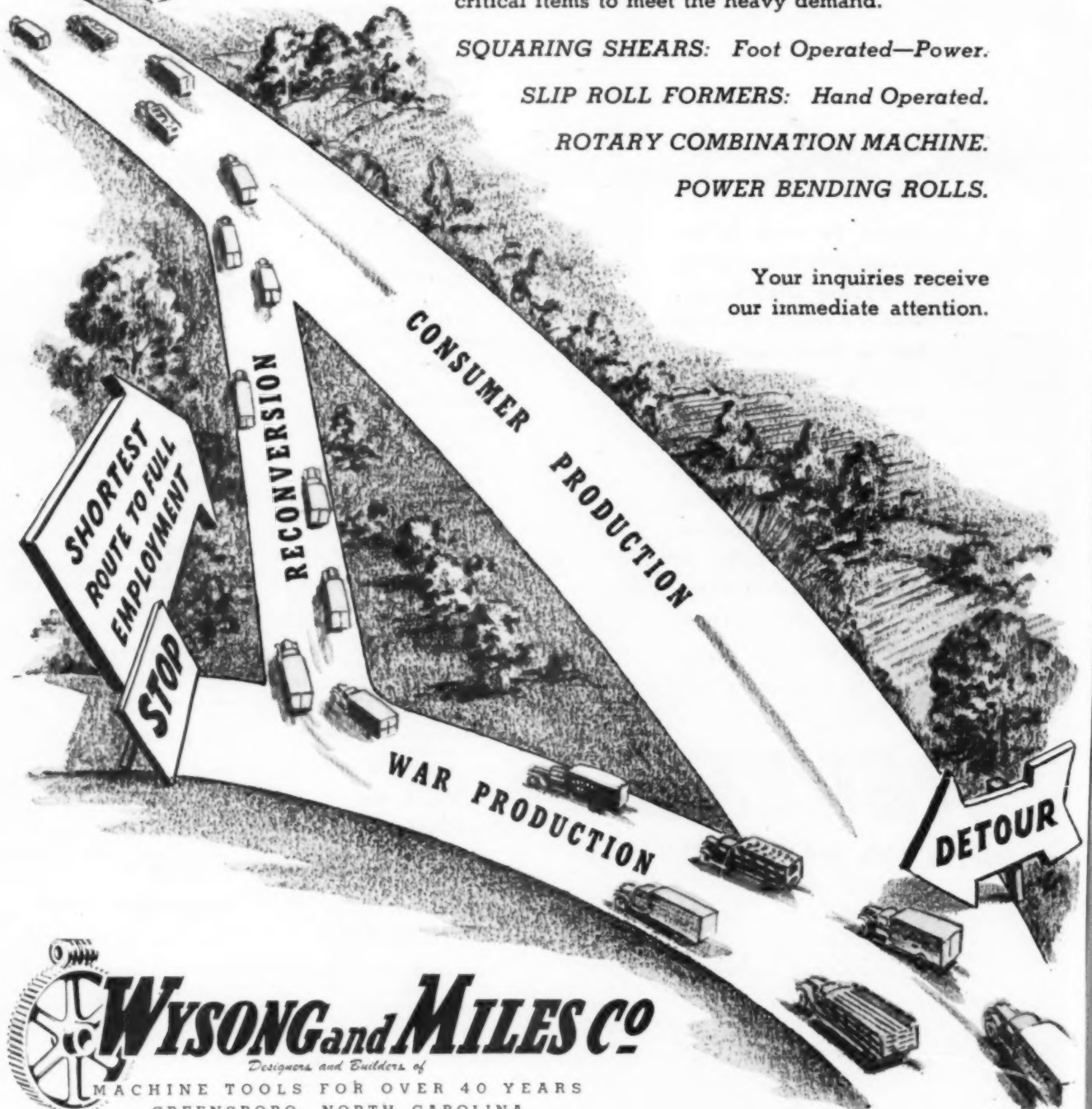
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# ASSOCIATION ACTIVITIES



## Fred G. Sedgwick Dies

Fred G. Sedgwick, 57, president of the Waterman-Waterbury Co., Minneapolis 13, and chairman of the Research Advisory Committee and a member of the board of directors of the National Warm Air Heating and Air Conditioning Association, passed away late Friday afternoon, October 19th at his home, as the result of heart failure.

Mr. Sedgwick was appointed to the Research Advisory Committee and became chairman about 1931. This committee, under his chairmanship, sponsored a long list of accomplishments and an ambitious program for forced warm air heating and air conditioning. Representatives of this committee with the help of the Research Staff at the University of Illinois, wrote Chapter 23 of the 1933 Guide of the American Society of Heating & Ventilating Engineers. It was at his suggestion that "Gravity Warm Air Heating" was compiled and published, followed by "Winter Air Conditioning" in 1939.

During his chairmanship, investigations were conducted in conversion blower applications; forced air heating; summer cooling with ice and refrigeration; attic fan operations; and fuel savings methods.

Mr. Sedgwick was vice president of the National Warm Air Heating and Air Conditioning Association in 1938 and 1939. He was a member of the Board, 1940-1945 inclusive.

A very large measure of credit for the present acceptance of warm air heating is due to Fred Sedgwick, who as untiring chairman of the Research Advisory Committee, inaugurated the investigations which have placed warm air heating in the position of leadership.

## "Tommy" Richardson Dies

H. T. Richardson, "Tommy" to most everyone in the warm air heating industry, died suddenly of a heart attack on Sunday, October 7 in St. Louis. Burial was in New York City on October 10.

For almost a quarter of a century "Tommy" was associated with his father and brother in the Richardson & Boynton Company, manufacturers of furnaces. On the death of the senior Richardson, Tommy assumed management of the company and continued in that capacity until the depression, when the R. & B. Company went out of business. Following a period away from the industry, "Tommy" joined the U. S. Steel Corporation in the St. Louis office, selling sheet metal material.

H. T. Richardson will be remembered as one of the officers and a director and president of the National Warm Air Heating & Air Conditioning Association, serving as president in 1935 and 1936. During his tenure as president, the National Housing Act came into being and President Richardson helped establish the warm air heating industry within the framework of this act. It was also in President Richardson's period of service that the book "Gravity Warm Air Heating" was edited by Professor J. D. Hoffman and distributed. During his presidency residential cooling became, for the first time, a subject for investigation in the Research Residence. The first Michigan State College "short course" was also held in 1934, with much credit due to the foresightedness of "Tommy" Richardson. As a result of President Richardson's effort the NWAHA&AC Association held the first joint session with the ASHVE in 1936 and the two associations joined hands for the 1936 biennial exhibition of heating and ventilating equipment in Chicago.

## NWAHA&ACA

The National Warm Air Heating and Air Conditioning Association will not hold the regular annual meeting in December because of hotel and travel conditions. Board of Directors and Committee meetings will be held. Plans are now being developed for the June, 1946, meet at the Edgewater Beach hotel in Chicago.

At a meeting in Chicago on October 10, attended by representatives from 35 manufacturers of warm air heating equipment who have subscribed to the proposed national advertising and dealer education program, the status of the proposed national advertising program was placed before the subscribers by the Publicity and Merchandising Committee.

It was reported by the committee that 71 manufacturers have subscribed some \$75,000 on the original basis (payable when \$200,000 is raised for the program). In addition some 55 jobbers have subscribed about \$8,000 and on the new basis for dealer memberships (American Artisan, August, page 78), dealers have subscribed some \$11,000. Thus there is on hand and pledged roughly \$100,000 for the program.

The manufacturer subscribers present at the meeting were asked if they would agree to two things:

- (1) Change their basis of payments from a contingent pledge to immediate payment of the amount pledged;
- (2) Increase the total of their amount pledged by 50 per cent.

If agreed to, this would place in the hands of the association for immediate start of the program an amount well in excess of \$100,000.

The manufacturers present agreed to both proposals almost unanimously. Subscribers will receive very shortly, then, a letter from the publicity committee asking each subscriber to refigure the amount of money he will contribute (old pledge plus 50 per cent) and will be asked to send his subscription at once or arrange some basis for payment according to his system of financial budgets.

With returns in hand and the amount of money available known, the publicity and merchandising committee will then rearrange the schedule of advertisements and make provision for two activities all subscribers want to see included in the program.

First of these is a consumers' booklet telling all about warm air heating. In the words of one officer—"the best consumer booklet ever put out—no matter what it costs." This new consumers' booklet will be given the widest possible distribution and will be placed in preparation just as quickly as possible.

Second, a satisfactory and continuing basis for dealer education through schools, text books, manuals, etc., will be laid down at once and as soon thereafter as possible, the committee will make recommendations for all sorts of dealer helps—decalcomanias, envelope stuffers, car cards, window posters, advertising mats.

Then, just as soon as these "musts" are in preparation, the schedule of advertising and the media to be used will be brought into line with available funds and the advertising program launched.

The Publicity and Merchandising Committee and the Officers and Directors believe that the launching of this program and the goal of 100,000 is assured, therefore everyone in the industry can concentrate on obtaining jobbers' and dealers' subscriptions in order that the original \$200,000 goal may be reached.

# Association Activities . . .

## Contractors' National

The Sheet Metal Contractors' National Association, Inc., is mailing out a series of letters to approximately 6,000 contractors in 48 states. These letters tell the aims of the National, what progress has been made, and the program for the future. Each letter will take up one activity or one committee and explain how that activity is being developed in the overall program for industry betterment. The first two of the series follows:

September 8, 1945

### PROGRESS . . . VITAL PROGRESS,

To the Allied Sheet Metal Groups of America has been made by this Association—  
A complete plan of organization and activity has been developed. The industry divisions embraced in the Association membership are:

- Sheet Metal Contracting
- Sheet Metal Manufacturing
- Sheet Metal Fabrication
- Industrial Sheet Metalwork
- Ventilation
- Air Conditioning and Cooling
- Warm Air Heating and Residential Air Conditioning
- Roofing

Under the direction of able committees, the following program has been instituted:

### BOOKKEEPING, COST ACCOUNTING, STANDARD FORMS AND ESTIMATING

To give members of the industry an adequate, complete financial knowledge of their business for all essential purposes.

### STANDARDS

To establish adequate, practical standards for all classes of work handled by members of the industry.

### TRADE PROMOTION

Plans to secure the maximum possible portion of the user's or consumer's dollar.

### TRADE RELATIONS

Plans to promote the most harmonious, practical, and efficient distribution of the materials and equipment from source to consumer.

### GOVERNMENT RELATIONS

To secure the most harmonious relationship possible between the Government and the members of this industry.

### LABOR RELATIONS

To secure for all members the most beneficial employer-labor co-operation.

### PUBLICITY AND MEMBERSHIP

Plans to increase our membership; to enhance its prestige and influence in National affairs and to promote the general welfare of the industry to the greatest extent possible.

Space does not permit more detail in this general presentation. One or two of these activities will be treated in some detail in each succeeding mailing.

Watch for the next one and in the meantime help this movement and yourself by sending your application to:

Sheet Metal Contractors' National Association  
567-69 Genesee Street  
Buffalo 4, New York.

Yours very truly,

SHEET METAL CONTRACTORS'  
NATIONAL ASSOCIATION

Patrick J. Varden, President

October 10, 1945

### MORE PROGRESS

### BOOKKEEPING AND COST ACCOUNTING SYSTEM WHY

The industry needs a practical, simple as possible but standard accounting system to:

- (a) Provide each user with a complete financial knowledge of his business
- (b) Accumulate necessary tax reporting data
- (c) Provide a uniform basis upon which the industry can gather statistical information
- (d) Secure lowest cost for users and require minimum of work to keep up

### STANDARD FORMS

Besides the savings in cost, much paper work will be saved and other practical benefits will accrue.

### ESTIMATING

Yes indeed, we know many wonderful estimators who can look at the job, close their eyes and let their subconscious juggle the figures—the result

\$4500 for a job which may be worth  
\$3500 or \$5500.

You—we—all of us—want a practical basic system which will give us within 1—2% of the actual man hours required on a job. That is a part of the job of this Committee.

IT CAN'T BE DONE—Oh yes, it can, and has been done in industries whose work is fully as complex as any type of sheet metal work.

Guesswork would be all done with if we had such a system. Sure, it will take some time, but you can help and speed the day.

You will help, we are sure, and shortly will tell you how. In the meantime, help this great industry movement and help yourself by sending in your application now to:

Sheet Metal Contractors' National Association, Inc.  
567-69 Genesee Street  
Buffalo 4, New York

Yours very truly,

SHEET METAL CONTRACTORS'  
NATIONAL ASSOCIATION, INC.

Patrick S. Varden, President.

The Sheet Metal Contractors National Association, Inc., now numbers a little over 700 members. An aggressive membership campaign is under way—working toward the goal of 2,000 members before the next convention in St. Louis, May 2, 3 and 4, 1946.

If you are not already a member, write National Secretary Clarence J. Meyer, for an application blank. If you are a member and have difficult problems, write Secretary Meyer or President Varden, who may be able to help you.

## Contractors' Alliance, Chicago

The Air Conditioning Contractors' Alliance of Chicago opened its 1945-1946 winter meeting program with a cocktail party and dinner tendered by Harvey Manny of the Robinson Furnace Company, October 5. Members of the Alliance and guests met at the Robinson offices for cocktails and were then taken through the shop, the offices and the various departments of this large establishment. Following the tour the party moved to the Graemere Hotel for a steak and fish dinner and the evening program.

Regular business was omitted, instead there was a sound slide film and brief speeches from some of the guests. To open the meeting, President George Kalvog welcomed the guests and expressed the hope that the coming months would be active and prosperous for our industry. Harvey Manny acting as host called upon George Boeddener, Managing Director, National Warm Air Heating and Air Conditioning Association, for a brief report on the association's proposed national advertising program and the new dealers division.

Mr. Boeddener reported that the advertising program has reached the point where a meeting will be held in October to determine when the advertising shall be launched and how extensive it shall be. There are, at present, some 170 members in the dealers division—all fully paid up in dues. The association hopes soon to employ a man to head up the dealer's division and set up the various activities such as schools, meetings, membership, etc.

Mr. Boeddener said he thought the recent survey of heating preferences and intentions compiled by Curtis Publishing Company (AA, August, 1945, page 88) concerns us in that 38 per cent of the replies preferred warm air and 51 per cent preferred hot water or steam. These figures correspond fairly well with FHA mortgage insurance preferences. The problem we face, said Mr. Boeddener, is now to hold the preference we now enjoy and extend that preference to more home builders, owners, and architects.

Martin C. Huggett, Executive Secretary, Chicago Metropolitan Home Builders, reported a growing preference among owners and builders for the one story, rambling type of house, with or without basement, but definitely the type of house which requires a forced air system to insure satisfactory comfort. He also said forced warm air is becoming favored in apartment buildings of the two and three family size.

Craig Graham, Sales Manager, Lennox Furnace Company, said a poll in Iowa showed some 140,000 Iowans going to buy or build a new home and 38 per cent of these families want to burn coal, 30 per cent gas and 29 per cent oil—the rest have no preference. The majority want forced warm air. As to the gas furnace situation, Mr. Graham said all manufacturers are producing as many furnaces as possible, but are having trouble getting certain parts and are still short on manpower. It will be months before production catches up with demand.

Lee Davignon and Carl Bock of Minneapolis-Honeywell ran the sound slide film explaining Moduflow. This film explains the three basic types of the Moduflow system and shows how the system operates with gravity warm air, forced warm air, forced hot water and two pipe steam systems. Installations were made in test houses and from these temperatures at the ceiling, breathing level, and floor were compiled—the Moduflow system with more nearly constant air delivery and constant air volume gave highly satisfactory results.

# Association Activities . . .

## New York

The September 1945 issue of the "Institute Ticker" (Vol. 9, No. 9) carries details of the current membership drive of the Roofing & Sheet Metal Crafts Institute, 307 W. 14th St., New York 14, N. Y. Contractors in the metropolitan New York area are being given an opportunity to join its ranks.

A campaign to gather information which would lead to the establishment of basic rules for protection against damage suits was fairly successful. However, Lawrence C. Corvi, president of the organization, expressed disappointment at the lack of greater response on the part of a number of roofing concerns. Members and non-members have been invited to participate, and the Institute has decided to allow more time in order to afford those who have not as yet replied an opportunity to do so.

The Institute will hold its annual affair some time in January, 1946, at the Henry Hudson Hotel, New York City. The affair is expected to be held in a larger ballroom than last year as indications are that there will be a much greater number on hand. More definite details will be given later, it was announced.

## Florida

The September issue of "The Florida Roofer," published by The Roofing & Sheet Metal Contractors Association of Florida, calls attention to the reduction in minimum unemployment tax to .07 per cent. When forced to lay off high-grade employees, the employer should send in the separation form to help the employee to get Unemployment Compensation. Members are urged to write the Industrial Commission at Tallahassee for form UCB-1 to be used whenever an employee has been discharged under disqualifying circumstances. This will prevent such employees from drawing unemployment compensation unjustly and will protect the employer's record as a consistent employer.

The "Florida Roofer" quotes the last paragraph of the September 12 report on Workmen's Compensation: "In this meantime, the 5.5 per cent average reduction in rates, as recommended by the National Council on Compensation Insurance in its filing of August 1, 1945, is hereby approved, effective October 1, 1945, pending further order, and shall be applicable to all business, that is, business in force on the effective date, as well as new and renewal business written on or after said date. Done this 12th day of September, A. D. 1945—J. Edwin Larsen, Insurance Commissioner."

## Michigan

The Michigan Sheet Metal, Roofing, Heating and Air Conditioning Contractors Association, in their October, 1945, Bulletin, announces the November 2 Board of Directors meeting at the Olds Hotel, Lansing, and the coming annual convention at the Pantlind Hotel, Grand Rapids, on Monday, Tuesday and Wednesday, March 18, 19 and 20. The association is asking members to suggest topics of general interest for the program—aluminum, the National association, labor relations.

The bulletin calls attention to the fact that organized labor is in the saddle and riding hard, and that whether you feel kindly toward organized labor or not, this is their day and the trend is looking upward for several years to come. Labor-contractor relations is therefore a matter of utmost importance. OPA and building price control is another important subject, and the bulletin outlines the schedule. If OPA representatives come into your office demanding records, demand proof that they are from OPA—they all have credentials. In compiling a price, dealers and contractors are required to use the same labor cost or charge used in March, 1942, plus any authorized increase up to October 3, 1942.

A number of contractors do not have sales tax licenses

and the wholesaler is collecting a 3 per cent tax on the purchase price of the goods. The law says every contractor must have a sales tax license and shall remit 3 per cent of the sales price of all material sales over \$50.00.

Rene Van Assche & Sons built a new, roomy and up-to-date sheet metal shop at 19331 Mt. Elliott Avenue, Detroit, and held a big opening on Friday night, October 19. Marshall, brother Lee and sister Clara were very busy dispensing hospitality and seeing to it that every one had a good time.

The Detroit association is perking along merrily—the membership is growing and the meeting attendance is good. Vice-President Buck Brundage from Celeryville (Kalamazoo) attended the October meeting. Visitors throughout the state are welcome to visit the Detroit meetings on the second Tuesday of each month at the Fort Shelby Hotel at 8:30. Buck Brundage informed the Detroit group that Minneapolis-Honeywell is putting on a school, January 14, 21, 28 and February 4, at the Columbia Hotel, Kalamazoo.

A list of the Traveling Salesman's Auxiliary members appears on the third and fourth covers of the October Bulletin.

## Indiana

President James R. Walker, of the Sheet Metal & Warm Air Heating Contractor's Association of Indiana, Inc., announces a two-day convention to be held at the Antler Hotel, Indianapolis, February 4th and 5th. Members of the association are being notified of their appointments to serve on the various committees.

Homer Selch, Secy.

## Indiana

The Sheet Metal and Warm Air Heating Contractors' Association of Indiana, in a recent bulletin to members reminds that because of state-wide representation, they have become affiliated with many Indiana committees, representing state legislative matters, in the firm belief that we band ourselves together in association to combat many evils in government and state controls.

The association is to have a full time secretary, who can travel over the state and organizing local associations, in the interest of the state association. With this in mind, dues have been raised from \$7 to \$15 a year with the promise that the money will be well spent in promoting the following creed:

"For the advancement of the furnace and sheet metal industry and to foster and encourage the organization of state and local associations; To provide a clearing house for the correction, correlation and dissemination of information of value; To promote high standards of practice; To provide adequate state representation in dealing with manufacturers and jobbers, other industry groups, other trades, and in handling industrial relation; To promote educational and apprenticeship programs; To institute widespread and well coordinated studies of present and future problems and to generally promote the welfare of our industry to the extent possible and permissible to insure a continued improvement of our service to the public."

An "Application for Membership" card invites "individual, firm or corporation who derives 75 per cent of their income from the sheet metal and warm air heating business" to send their signed application and \$15 dues to Homer Selch, Secretary, 944 Hosbrook Street, Indianapolis 3. The creed of the association is printed on the back of the Application-for-Membership card.

## New York State

The New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Inc., will hold their annual convention in Buffalo, New York, at the Statler Hotel, April 2 and 3, 1946.—Clarence J. Meyer, State Secretary.

# Association Activities . . .

## Carolinas

L. K. Flynt of Charlotte, president of the Carolinas Roofing & Sheet Metal Contractors' Association, presided at the quarterly officers' meeting of the association held at the Barringer Hotel, October 4.

Ten officers from North and South Carolina were present, and reports from all standing committees were reviewed. Particular interest was shown in the success of the Veterans' Rehabilitation Train-on-the-Job Program. Members of the association are working their quota of veterans and receiving well qualified men for this training. Full cooperation is being given the OPA, in the control of prices in this branch of the construction industry.

The mid-year conference is to be held December 6 in Greenville, S. C.

## Cleveland League

Officers of the Warm Air Furnace and Air Conditioning League, Cleveland, are

President—Robert Thompson, Thompson Sheet Metal & Furnace Co., 1472 Hayden Ave., East Cleveland 12, Ohio  
Secretary—Jerry Bauman, 12704 Shaw Ave., Cleveland 8  
Treasurer—William Powell  
Directors—William Scott, Felix Damos, Arnold Meder, Ray Lesiak, Don Fisher, Pete Timp and William Fingerhut.

Robert Thompson, President

## Detroit

The Detroit Association of Warm Air Heating and Air Conditioning Contractors in their September 4 letter to members, reminds that copies of the application for a Residential Maintenance and Repair Contractor are on hand. Contractors are warned that if they had problems during the war, they will have bigger and better problems to get the business of the United States on an even keel, and that they will need to counsel with others in their line for their own protection. Meetings are their best insurance.

All union shops, on and after September 15th, will have to pay double time for all overtime.—N. J. Biddle Sec.

## Cook County

Sheet Metal Contractors' Association of Cook County, Illinois, has scheduled dinner meetings at 12:30 noon, at the Builders Club on the third Wednesday of the month. At the October 17 meeting Revere Copper and Brass presented a motion picture showing a laboratory study of the expansion and contraction of copper, under the direction of L. B. Anderson, assisted by Mr. Hoaglund. Mr. L. A. Thomas of the Chicago office secured and arranged the program.

The apprenticeship committee has been quite busy on the new G. I. apprenticeship program.

A nominating committee has been appointed to prepare a slate of officers to be voted on for the 1946 election.

Wm. J. Perkinson, President.

## Fox Valley, Illinois

The Fox Valley Furnace and Sheet Metal Contractor Association met on September 18 at the home of President and Mrs. Jack Stowell at 607 South Spencer Street, Aurora, Illinois, to celebrate the twelfth anniversary of the organization.

School sessions are being held on the second Tuesday of each month at the Baker Hotel in St. Charles. Jack Stowell, the instructor, invites contractors in the vicinity who are not already members to be guests at one of the classes and learn of the fine educational program being carried on. Sections of "Practical Warm Air Heating" which are currently being published by the National Warm Air Heating and Air Conditioning Association are being used as text books.

## A.S.H.V.E. 52nd Annual Meeting

The Council of the American Society of Heating and Ventilating Engineers announces that the 52nd Annual Meeting of the Society will be held January 28-30, 1946, in New York City with headquarters at Hotel Commodore.

Pres. C.-E. A. Winslow, New Haven, Conn., has indicated that prior to the regular business and technical sessions there will be meetings of the Council, the Committee on Research, Technical Advisory Committees, and other Special Committees.

The General Chairman of Arrangements is R. H. Carpenter of the New York Chapter. Important matters that require the attention of Society members are, revisions to the Society's Charter, and amendments to the Constitution and By-Laws. The Program Committee has selected a variety of subjects for the technical sessions on problems dealing with heating, ventilating, and air conditioning.

## Stoker Committees Appointed

Stoker Manufacturers' Association, 307 North Michigan Avenue, Chicago 1, Illinois, has appointed two standing committees for the ensuing year. Walter Sormane, Mendota, Illinois, president of the association, announces the appointment of the following to the association's Engineering and Research Committee:

A. O. Dady, Chairman—David Bradley Manufacturing Works, Bradley, Illinois; (Mr. Dady will be serving his second term as chairman of this important committee).

The following members of Mr. Dady's committee were appointed:

J. G. Beard—Illinois Iron & Bolt Company, Chicago  
E. F. Biddle—Fairbanks, Morse & Company, Chicago  
B. M. Guthrie—Kingston Products Corporation, Kokomo, Indiana

Fred L. Hilder—Electric Furnace Man, Inc., Emmaus, Pennsylvania

R. W. Suman—Link-Belt Company, Chicago

E. C. Webb—Iron Fireman Manufacturing Company, Cleveland

Glynn L. Coryell—U. S. Machine Corporation, Lebanon, Indiana

Clark Scholl—Steel Products Engineering Company, Springfield, Ohio

J. W. Oeffinger—Anchor Stove & Range Company, New Albany, Indiana

E. A. Field, Jr.—Conco Engineering Works, Mendota, Illinois

The following were appointed as members of the association's Advertising and Public Relations Committee:

R. W. Conkey, Chairman—Conco Engineering Works, Mendota, Illinois. (Mr. Conkey is serving his second term as chairman of this committee.)

C. T. Burg—Iron Fireman Manufacturing Company, Cleveland  
R. M. Gehl—Gehl Bros. Manufacturing Company, West Bend, Wisconsin

Clarence Schuettgenberg—Link-Belt Company, Chicago

J. H. Simpson—Hershey Machine & Foundry Company, Manheim, Pennsylvania

Frank Hoke—Holcomb & Hoke Manufacturing Company, Indianapolis, Indiana

H. L. Bilsborough—A. O. Smith Corporation, Milwaukee

Clarence Rundall—Peerless Manufacturing Corporation, Louisville, Ky.

Mr. Sormane also stated that the first meeting of the new Engineering Committee will be held in the near future at Urbana, Illinois, probably as a joint meeting with the Stoker Subcommittee of Bituminous Coal Research, Inc., and with the stoker and coal testing engineers of the Illinois Geological Survey.

## Coming Conventions and Meetings

1945

December 6—Carolinas Roofing & Sheet Metal Contractors Association. Mid-Year Conference. Greenville, S. C. J. Victor King, Box 1049, Sanford, N. C.

1946

Jan. 28-30—Council of the American Society of Heating and Ventilating Engineers. 52nd Annual. Hotel Commodore, New York City. A. V. Hutchinson, Secy., New York City 10.

Feb. 4-5—Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc. Annual. Antler Hotel, Indianapolis. Homer Selch, Secy., 946 Hosbrook, Indianapolis 3.

# Equipment Developments

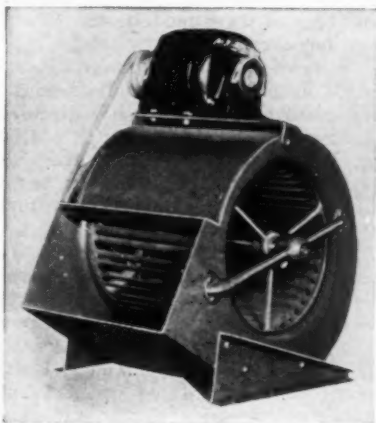
For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 174 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.  
● Indicates product not listed in 1945 Directory.

## 65—V-Blowers

Viking Air Conditioning Corporation, 5600 Walworth Avenue, Cleveland 2, announces the series V Viking blower units—smaller, increased air delivery and quieter performance.

The new wheel made by louvering a continuous sheet instead of assembling individual blades, is designed



for high production and has desirable performance characteristics.

Another feature is the streamlined bearing bracket with ball and socket mounted bearing, self-contained in a streamlined bracket.

The new blower is available in 9½ in. for 750 cfm; 11 in. for 1000 cfm; and 13 in. for 1800 cfm.; for bottom horizontal upblast or angular discharge, with either rear or top motor mount.

## 66—Fargail Soldering Cream

Farrelloy Company, 1243 N. 26th St., Philadelphia 21, is introducing Fargail soldering cream. Fargail is an emulsification, cream colored, and smooth in texture. It contains no mineral acids, gives off no toxic fumes.

Metal such as phosphor bronze and chromium nickel, are as readily soldered as tinned steel, galvanized iron, copper, brass, etc., and any combination of these metals may be soldered.

Fargail cream is buffered to reduce corrosion and may be used on all operations where soldering paste is indicated. It is highly effective when used for sweating copper fittings.

Fargail soldering cream is put up in half-pound cans.

## 67—Oilifter

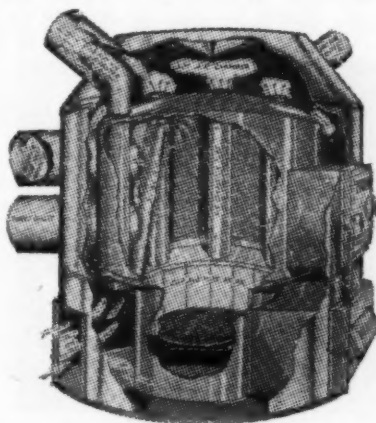
Automatic Products Company, 2450 N. 32nd St., Milwaukee 10, Wisconsin, announces the A-P Oilifter to replace hand pumping of fuel oil and



to make any vaporizing burner appliance completely automatic by lifting fuel from remote storage (as far away as 100 feet horizontally) to as high as third floor.

## 68—Tuberator

Wheeling Furnace Corporation, 2nd and Jefferson Sts., Martins Ferry, Ohio, announces the Tuberator—a steel gravity furnace with open dome fire chamber, radiant heated air con-



ductor tubes, and automatic flue draft carburetor—which can be converted to stoker, oil or gas.

Large, heavy vertical steel tubes are built around the inside walls of the fire chamber, just above and surrounding the fuel bed. The automatic flue draft carburetor is a barometric draft control, drawing air against the rear side of the diving flue baffle plate.

## 69—Ni-Rod

The International Nickel Company, Inc., 67 Wall St., New York, N. Y., is introducing a new welding electrode for making machinable welds in cast iron at the company's Bayonne Works. It represents a development by the Inco Development and Research Division's Research Laboratory with the cooperation of the Bayonne Works.

Besides this new electrode, trade name Ni-Rod, another new electrode also has been developed. This is the "133" 80-20 nickel chromium electrode for welding the Inconel side of Inconel clad steel. Besides these, 6 other electrodes are now being produced at the plant for arc welding. Gas welding rod and uncoated wire for submerged melt welding are produced at the Huntington Works of the company. The 6 types of electrodes are designed for Monel, Inconel, nickel, "L" Nickel, "K" Monel, 70-30 cupro-nickel, and the various clad steels. Among them is another new product, "132" AC-DC rod for Inconel.

## 70—Floor Furnaces

Utility Appliance Corporation, 4851 S. Alameda St., Los Angeles 11, is producing 1946 floor furnaces from new designs with a minimum of projecting floor grills on the dual furnaces. Dual models have a new dam-



per control that assures smooth operation with positive distribution of warm air.

All Utility floor furnaces meet the A. G. A. requirements for maximum temperature in the heat exchanger units.

# Equipment Developments.

For your convenience in obtaining information regarding these items, use the coupon on page 174.

## 71—Postwar Blower

The Lau Blower Company, Dayton 7, Ohio, announces their new Lau "A" Series blower assembly.

Features include a new three-point suspension method bearing bracket, the brackets being positively attached to the shroud thereby forming an integral part of the housing. The bracket, in its fixed position, is used for various angles of discharge. This improved three-point bearing suspension maintains positive alignment of the blower wheel to the venturi. It has other advantages. The bearing assembly also is new, frictionless, and self-aligning.



Mounting the motor is provided in an attachable piece which is easily convertible from rear to top position by using two sheet metal screws. The blower contains a new, center suspension-type wheel for low and high speed. Other new developments include a specially designed housing base; redesigned scroll with offset in scroll sides for greater strength; and discharge outlet design which is constructed so that the cut-off cannot set crooked on the outlet.

## 72—Reversatemp

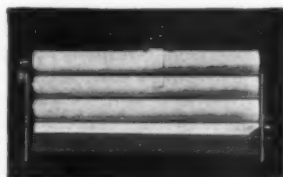
Drayer-Hanson, 738 E. Pico Blvd., Los Angeles 21, offers the Reversatemp to keep room temperatures constant—the unit alternating between heating and cooling hourly if necessary. There are no chimneys, flames, soot, smoke, ashes, fire hazard or idle equipment.

The smallest Reversatemp unit fits into a 3½ by 5 by 7-foot space. Units are available for homes, stores, hotels, apartment houses, offices. G. E. Clancy, Drayer-Hanson scientist, designed Reversatemp based on the reversible cycle heat pump principle.

## 73—Humidifier

Skilbeck Manufacturing Co. of Kenosha, Wis., announces an automatic humidifier which operates off the hot

With cover removed



As installed in room.

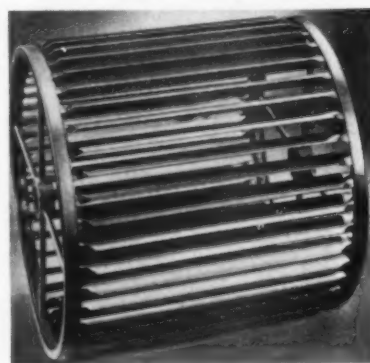
water tank and is capable of serving an average 6-7 room home.

Designed to be used in connection with any type of heating system—the Skilbeck humidifier evaporates water by circulating hot water through coils, which are wrapped with absorbant material.

## 74—Blower Wheel

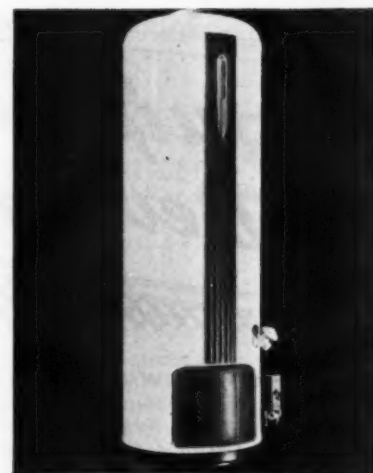
Robert (Bob) A. Mayne, Mayne Products Company, 324 Harries Bldg., Dayton 2, Ohio, announces a new centrifugal blower wheel for which he has patents pending.

The new Mayne blower wheels are sturdy, light weight and of high ef-



iciency. Of interest is the end ring construction which provides more area for air to enter, thus reducing entrance losses and providing more effective use of the overall blade area.

Diameters now available, range from nine to sixteen inches inclusive, excepting fifteen inches. They are in normal widths of nine, ten, twelve, and fourteen inches—a total of 24 sizes.



## 75—Oil Water Heaters

The Coleman Company, Inc., Wichita, Kansas, announces a new line of oil-burning water heaters consisting of three models—20, 30 and 45-gallon sizes.

All models have automatic fuel control, automatic pilot, and automatic temperature control which maintains a constant water temperature of 150 deg. F. The hot water recovery is as much as 150 per cent an hour, based on a 60 deg. F. temperature rise.

The vaporizing-type burner (a specially engineered Coleman low-draft burner that operates on a .03 draft) is a development of the burner used on Coleman oil heaters.

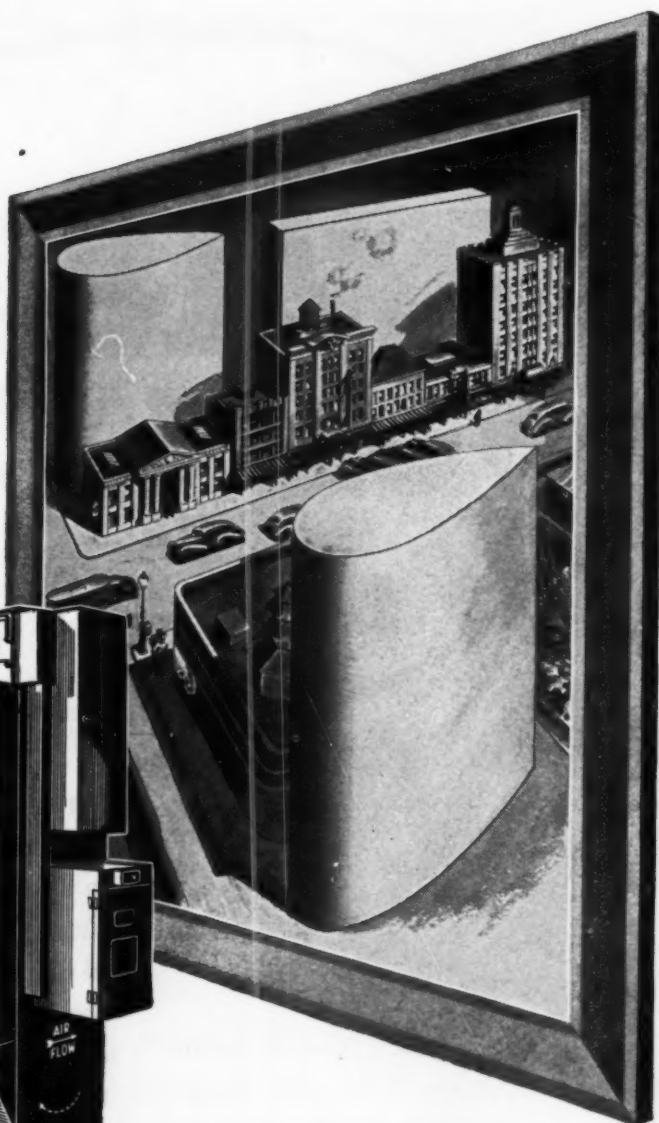
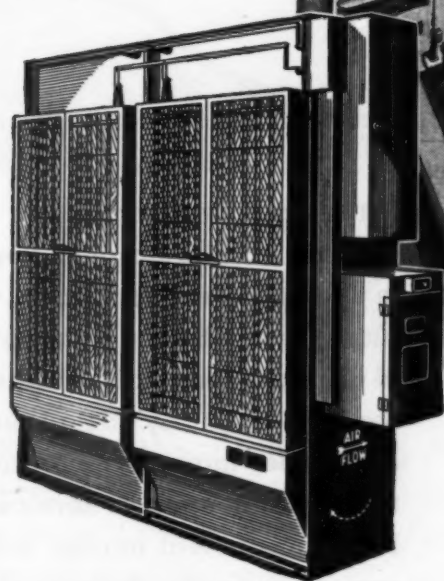
The new Coleman Automatic Draft Meter is standard equipment and eliminates excessive drafts and thus prevents heat waste up the chimney.

These water heaters have attractive modern streamlined design, with white plastic enamel finish and maroon trim. They are listed by Underwriters' Laboratories.

## 76—Transfax Process

Eastman Kodak Company, Sensitized Goods Sales Division, Rochester 4, N. Y., has developed a new method for reproducing working drawings on flat surfaces—the Transfax Process. A clean sheet of metal is given a thin coat of Kodak Transfax primer with a spray gun; quick-drying Kodak Transfax Spray is sprayed over the primer; the drawing or photographic reproduction of a drawing (complete fabricating instructions may be included) is placed in contact with the sensitized metal and a short exposure is made to arc or mercury vapor lights; weak ammonia water poured over the surface loosens all material exposed to light, a spray of tap water washes away the loosened coating, leaving only the white Transfax Spray on the metal; the plate is placed on edge to drain and dry; then overcoated with the Primer. The reproduction withstands bending, shearing, punching, and flame-cutting operations.

*The Clean Air Zone*  
**HAS COME TO**  
**"MAIN ST."**



## **SAVING MILLIONS ANNUALLY FOR BUSINESS AND INDUSTRY**

Office buildings, banks, department stores, theatres, libraries, drug stores, business houses of all kinds — from one end of Main Street to the other — are recognizing the importance of *clean air* in their establishments. Economically, *clean air* is saving millions of dollars annually by reducing building upkeep — more millions in reducing merchandise spoilage. Costly dust, soot and smoke need not be tolerated, for AAF Electronic Air Filters are designed to meet every clean air requirement. Send today for free Electro-Matic Bulletin No. 250D — you'll find it helpful in overcoming your dirty air problems.

**AMERICAN AIR FILTER CO., INC., 355 Central Avenue, Louisville 8, Kentucky**

**In Canada: Darling Bros., Ltd., Montreal, P. Q.**

*Electro* • **MATIC**  
**THE AAF ELECTRONIC AIR FILTER**

# WISE FURNACES



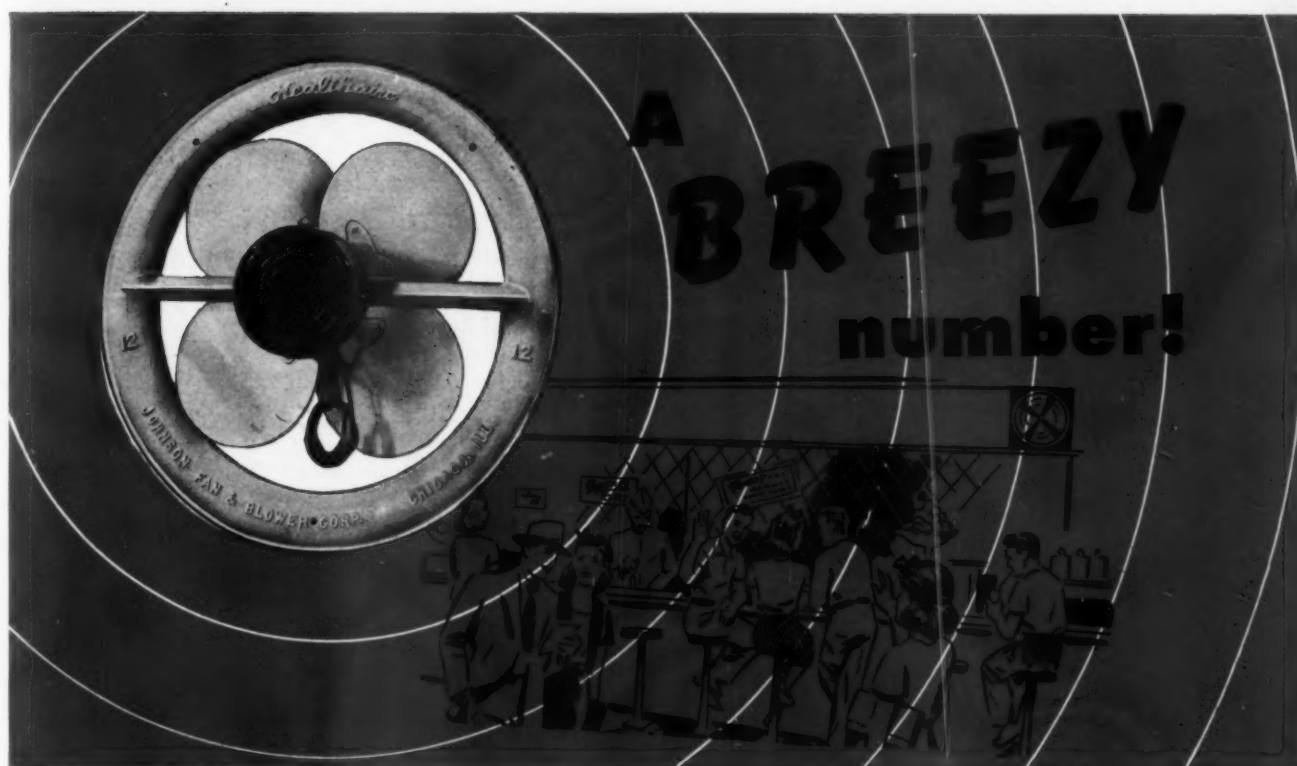
Better days are coming! It won't be long before you are able to go after your business prospects in the good old-fashioned way. Home heating plants took a terrific beating during the four years of the war when lack of materials and man-power resulted in many installations performing without proper maintenance and others well beyond their normal span of service. As a result a great NEW equipment market will be yours when we can again make deliveries from the old, reliable WISE line.

Right now, along with other manufacturers, we're having difficulties which will complicate deliveries for awhile. But always remember that we have been in the furnace manufacturing business for over forty years and when we CAN supply you it will be with new, superior units embodying all the wisdom and experience we've gained in that time.

Just be patient a while longer . . . it will be to your advantage in the long run.

**THE WISE FURNACE CO.**

**AKRON 8, OHIO**



## Healthaire

**B**REEZY?...you bet! But sturdy and well constructed too. This Johnson Healthaire "Special 12" is one of our most popular selling items.

Four reasons for this stand out performance are:

- 1 HANDY TO STOCK.** They are individually packed in special corrugated containers.
- 2 EASY TO SELL.** Reasonably priced for quick turnover.

**3 SIMPLE TO INSTALL.** Their compact size and construction save many hours of labor.

**4 ECONOMICAL TO OPERATE.** The "Special 12" is designed to move the most air at the least cost. It solves any one of a dozen or more small ventilating problems.

*Tie-up with this fast-selling, profit-making item today.*

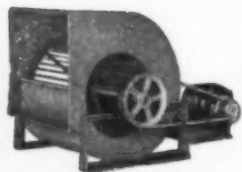
*Order from...*

# JOHNSON FAN & BLOWER CORP.

1319 W. Lake Street

Chicago 7, Illinois

# REX BLOWERS



Because they are available in a wide variety of sizes, standardized for economical quantity production—yet flexible in operation, Rex Blowers can be speedily and accurately adapted to most light duty blower requirements.

The selection of the right blower for air conditioning and ventilating is essential to the continued success of that equipment. Warm air furnaces, air conditioning units and ventilating systems cannot give satisfactory service unless they are correctly blowered.

Many Air Conditioning, Heating and Ventilating Engineers prefer Rex Blowers because they know the Rex line is so diversified in styles and ratings that they can get, without special designing, exactly the right blower for their job.

Others prefer Rex Blowers because they like the cooperation and helpful assistance our engineers give them when solving their forced air problems.

When considering your next blower application or installation problem, avail yourself of Rex service. Rex Engineers will be glad to work with you and help you select the correct blower for your job.



2301 Superior Avenue

Cleveland 14, Ohio

Pioneer Blower Manufacturers

## New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 174.

### 192—Pipe and Smokestack, Elbows, Etc

Chicago Metal Mfg. Co., 3724 S. Rockwell Street, Chicago 32, is distributing a two-page folder illustrating and describing their Lock-Seam pipe—blow pipe and smokestack with or without angle rings attached, blow pipe elbows, ventilators, automatic electric controls, eaves trough and conductor pipe and elbows, furnace pipe and elbows, dampers, furnace cement and furnace dampers.

### 193—Jessop Stainless Steels

Jessop Steel Company, Washington, Pa., is distributing an 8-page folder with stainless steel standards, physical properties and mechanical characteristics, corrosion resistance, properties in fabrication and a page devoted to stainless-clad steels.

Jessop produces hot rolled, cold drawn, centerless ground bars, billets, castings, sheets, circles, plates, rings, strip, special shapes, and flanged and dished heads.

### 194—Metal Zipper Welders

Hobart Arc Welding Equipment Company, 1527 Madison Avenue, Indianapolis 2, Indiana, is distributing a 4-page folder entitled "Mid-States Metal Zipper Hy-Cycle Arc Welders"—the modern method of metal stitching or metal carpentry, commonly called arc welding. The folder illustrates and describes the line for electric welding of metals in as light as 22-gauge. The 9,000 arc torch, standard equipment with all Metal Zippers, is also pictured and described.

### 195—Anniversary Catalog No. 80E

The E. E. Souther Iron Co., 1951 Kienlen Ave., St. Louis 20, founded in 1865, by Eustace E. Souther, is celebrating the 80th anniversary. The company was incorporated in 1894. In 1933, the controlling interest was purchased by Bruce Haines, who became its president. Catalog 80E is now being distributed showing sheet metal products, warm air heating equipment and allied building supplies manufactured or distributed, with price list, and a brief history of the company.

### 196—Cellular Rubber Pamphlet 845-21

The Sponge Rubber Products Company, Derby Place, Shelton, Conn., has just completed an informative circular on Cellular Rubber—four page pamphlet, 845-21, describing various forms in which sponge rubber, bonded fibre and other sudsensity materials are manufactured. Illustrates ninety-eight molded, die cut and fabricated shapes of flexible, elastic compressible products used for cushioning, shock absorption, vibration dampening, sealing, insulating, gasketing, etc.

### 197—Arc Welding Design and Practice

The Lincoln Electric Company, Cleveland 1, Ohio, has released the eighth edition of "Procedure Handbook of Arc Welding Design and Practice." Price: \$1.50 in the U. S. A.; 1,282 pages, indexed.

Part I covers Welding Methods and equipment; Part II, Technique of Welding; Part III, Procedure, Speeds and Costs; Part IV, Weld Metal and Methods of Testing; Part V, Weldability of Metals; Part VI, Welded Steel Construction—Machine Design; Part VII, Designing of Arc-Welded Structures; Part VIII, Typical Applications of Arc Welding in Manufacturing, Construction and Maintenance.

There are thirty pages of reference data.



# THIS TRADEMARK...

WILL SHORTLY APPEAR ON AN ENTIRELY NEW LINE of oil heating equipment — new, yet thoroughly tried out in the war. Since the early days of the oil heating industry — Master Kraft products have always embodied high quality and advanced engineering — and have BEEN BACKED by the kind of advertising and sales promotion that sells merchandise.

Master Kraft Dealers have made money — built new customers — increased their business each year.

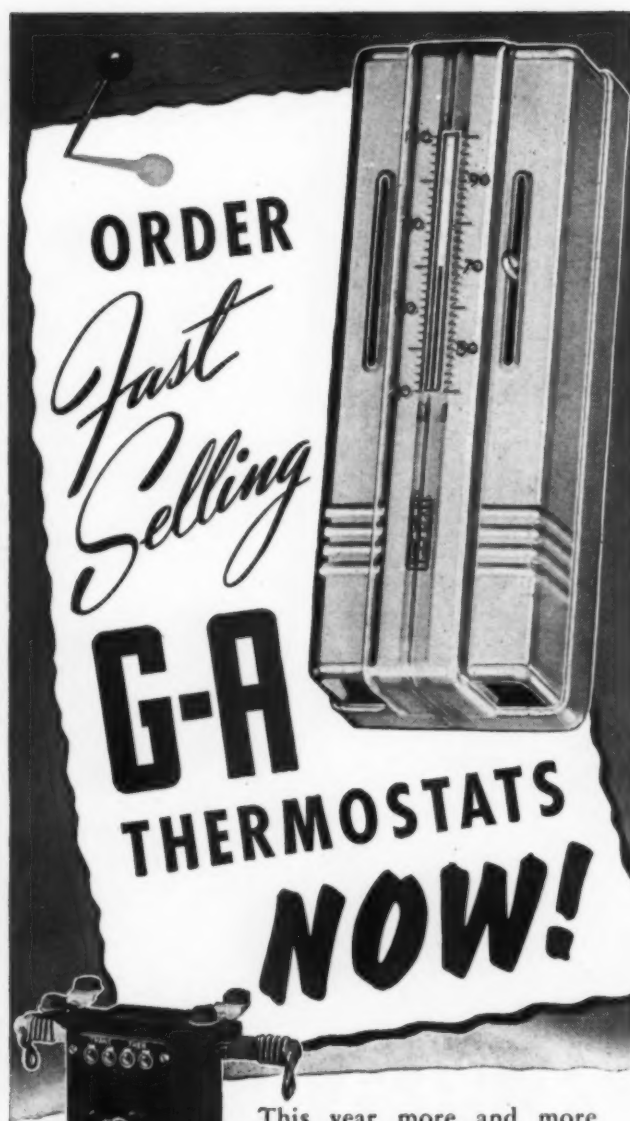
NOW — with the new Master Kraft POSTWAR line, the profit opportunities for dealers will be greater than ever.

Before you sign any oil heating franchise — SEE the sensational new Master Kraft line.

We repeat . . . it's NEW . . . and something you should SEE.  
Write for details.

## HARVEY-WHIPPLE, INCORPORATED

SPRINGFIELD 1, MASS.



**ORDER**  
*Fast Selling*  
**G-A**  
**THERMOSTATS**  
**NOW!**

This year more and more homeowners are turning to Gleason - Avery Thermostats for cold-weather comfort.

We're doing our best to fill orders as promptly as possible, of course. However, we can promise early delivery *only* on orders received NOW.

Your customer will appreciate G-A accuracy . . . ease of installation and operation . . . positive safety\* . . . AND low cost. Order now; direct orders accepted when accompanied by your wholesaler's name.

\*G-A exclusive Straight Line Control and Spring Return prevents overheating, eliminates troublesome sprockets and rotating arms.

Approved by  
Anthracite Industries Laboratory

No. 130 Furnace Sentry Unit Package for hand-fired domestic heating systems, complete with thermostat damper motor, and all accessories, ready to install.  
**LIST PRICE... \$19.50**

**Gleason-Avery, INC.**  
**AUBURN, N. Y.**  
A RELIABLE NAME IN TEMPERATURE CONTROLS

## New Literature

For your convenience in obtaining copies of new literature use the coupon on this page.

### 198—Engineering Manual

Rigid-Tex Corporation, 658 Ohio Street, Buffalo 3, N. Y., is distributing a 16-page catalog entitled "Rigidized Metals for Strength, Utility, Texture," and an engineering manual. Rigidized metals are illustrated and described, with sizes and advantages, and their various applications.

### 199—Lincoln's Welding Education Program

The Lincoln Electric Company, 12818 Coit Road, Cleveland 1, is distributing a complete revision of "Building Your Career in Arc Welding"; also a leaflet covering "The Lincoln Courses in Welding Engineering." The two pieces outline Lincoln's educational program.

### 200—Air Filtration in Central Systems

Owens-Corning Fiberglas Corporation, Toledo 1, Ohio, is distributing a 24-page publication entitled "Air Filtration in Central Systems"—a manual for architects, design and maintenance engineers on the application of Dust-Stop filters.

### 201—Agitair Exhauster Bulletin Ex-101

Air Devices, Inc., 17 East 42nd Street, New York 17, N. Y., is distributing Bulletin EX-101, 12-page, 8½ x 11 inches with technical data in both ventilating and flue-capping applications, for the Agitair wind-actuated, weatherproof exhauster; to be mounted atop any building, vent, or horizontally to suck hot, stale air, steam or odors out of the building when only a slight breeze is blowing from any direction. The exhauster has no moving parts.

### 202—Kemick—Heat Resisting Paint No. 6-2-11-5

American Chemical Paint Company, Ambler, Pa., has released a Technical Service Data Sheet covering Kemick—a chemical paint designed for hot metal surfaces such as fire doors, gas burners, flues, smoke pipes, etc. Kemick produces a gray-black finish. When heated, Kemick partly decomposes, the volatiles are expelled and chemicals are liberated to react with the metal surface, to become a part of it, and to neutralize rust producing agents. The heat changes Kemick into materials which become integral with the metal and prevent rust. The protective value improves with successive applications.

Shipped in ¼ pt., 1 pt., 1 qt. and 1-gal. cans and in 5-gal. pails.

Kemick is applied by brushing, spraying or dipping.

#### FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.  
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

65	66	67	68	69	70
192	193	194	195	196	197
198	199	200	201	202	

Name .....  
Company .....  
Address .....  
Are you Manufacturer.....Jobber.....Dealer.....

# WHY IS CONSOLIDATED ALREADY A LEADER IN THE STOKER INDUSTRY?

★ When a new product invades a market where scores of manufacturers are already competing, and within a few months sells 1 out of every 10\* of the market's total volume, as Consolidated Stoker has done, it's worth asking "Why?"

The answer is plain—and significant to stoker dealers. Just this: *Consolidated's features make this new star among stokers the most salable coal-burning equipment on the market today!*

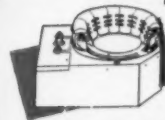
Every last part of this stoker, from hopper to retort, has been engineered anew—freshly conceived to provide a precision machine for burning coal more economically and more automatically than ever before—a precision machine that cuts service costs to the vanishing point. The result is that every one of those parts has a *selling story*—often an *exclusive selling story*.

Experienced stoker dealers, when they see Consolidated, don't want to continue selling against it, they decide to sell *with* it. The topnotch stoker salesmen are the ones who are most enthusiastic about Consolidated.

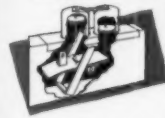
We're able to make immediate deliveries. And we've got a franchise as outstanding as the stoker. All we need from you is the word that you are interested. That won't obligate you, but it will get prompt action from us. We're looking for the right men to build this new leader in the stoker industry into permanent leadership.

\* BASED ON U. S. BUREAU OF THE CENSUS REPORTS FOR JUNE, JULY, AUGUST AND SEPTEMBER 1945 ON CLASS B (DOMESTIC) STOKERS.

## Features That Get The Order



Consolidated's burning principle extracts every heat unit from coal. A sharp departure from the beaten path, it utilizes low type tuyeres whose higher efficiency was discovered in the designing of stokers for marine boilers. These tuyeres give an unusually large top surface air delivery, prevent clogging, and reduce coke-tree formation to a minimum. They contain chrome and nickel for long life.



Consolidated's dual-pressuremeter keeps combustion under precision control. No other stoker has anything like it. Its two pistons measure the air pressure required for the ever-changing fuel bed—keep the windbox damper in the exact position for each given burning condition. It is comparable only to the costly over-and-under fire controls used in the large power stations. It means maximum efficiency and coal saving.



Consolidated's moto-air unit, quietest ever is another exclusive feature. If you think a stoker has to be noisy, just cock an ear to the faint whisper of Consolidated. A multivane fan of large capacity (so that it can be run at lower speed) along with New Departure ball bearings accomplishes this new standard of quiet operation. The exclusive Consolidated Moto-Air Unit also eliminates strain on the motor and does away with the attendant expense of motor and fan servicing.



Consolidated's dual-inter-planetary transmission calls a halt to the transmission breakdowns that constitute such a large percentage of stoker troubles. The power to crush 90% of the foreign obstacles in coal is traceable to this transmission's superior design and manufacture. Stressproof steel of 129,000 lbs. tensile strength, advanced gear design, precision down to airplane engine tolerances—these and other refinements give it an enormous factor of safety. . . . No outdated shear pins are used. . . . At an unusually high torque an automatic switch kicks out and stops the motor, eliminating the pounding action of fully automatic transmissions that start and stop in an effort to overcome the jam. Unquestionably, this is the finest stoker transmission ever built.



Consolidated's feed screw is a tough member, tensile strength 110,000 lbs. per square inch. Cast steel with chrome nickel alloy does it. It floats in the hopper and is tapered in the housing so coal will reach the retort in its prepared form, not ground to dust. Under the feed screw is a replaceable, thick steel shoe where wear is greatest.

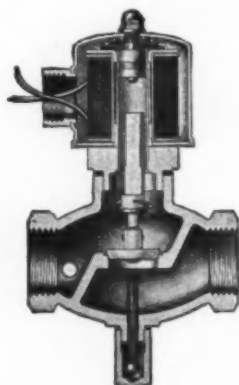


CONSOLIDATED  
*Stoker*

CONSOLIDATED INDUSTRIES, INCORPORATED • LAFAYETTE, INDIANA

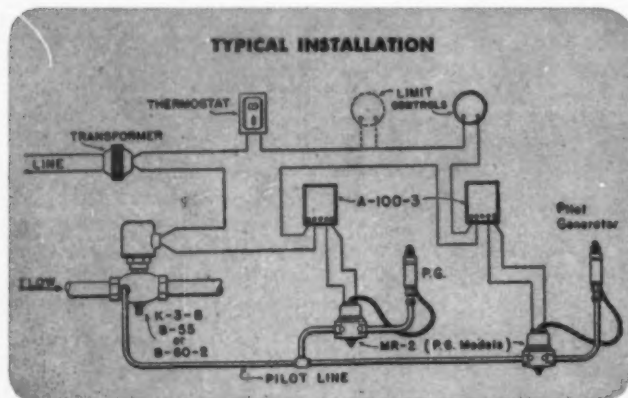
## General Controls K-3B MAGNETIC GAS VALVE

"THE VALVE WITH  
101 USES"



**Quiet, positive, trouble-free operation.**  
**For operating pressures up to 5 pounds.**  
**For all voltages and frequencies, A.C. or D.C.**  
**For natural, manufactured or L.P. Gas.**  
**Available in wide range of sizes, 1/4" to 6" I.P.S.**

GENERAL CONTROLS K-3B is a versatile magnetic gas valve that delivers efficient, positive, continuous performance. It has earned universal acceptance for use in controlling gas to furnaces, boilers, heat-treating ovens, conversion burners and scores of other applications.



### 100% Shut-off for 2-Chamber Furnace

This typical K-3B installation will undoubtedly suggest many other gas control applications for this versatile valve. If you would like further information on what the K-3B, and other General Controls Magnetic Controls will do for you, write the nearest Factory Branch, Distributor, or direct to:

**GENERAL CONTROLS**  
801 ALLEN AVENUE  
GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS  
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH  
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

## With the Manufacturers

### Blower Division Moline

The Herman Nelson Corporation, Moline, Illinois, announces that all manufacturing operations of their Blower Division will be transferred from Chicago to the new 55,000 square foot plant recently completed in Moline. This new plant, constructed at a cost of approximately \$200,000 to provide necessary facilities for high priority Herman Nelson war work, is readily adaptable for conversion to the manufacture of blowers of all types and sizes. Transfer of equipment, already underway, is expected to be completed in November.

Henry S. Norris, until recently head of the Heating Branch of the War Production Board, has been appointed vice president of Consolidated Industries, Inc., Lafayette, Indiana, stoker manufacturers.

Until 1929, Mr. Norris was associated with the American Radiator Company in New York. In 1929, he formed his own firm, the Nassau Engineering Company, representing the Iron Fireman Company and Carrier Corporation. Called to the war Production Board in 1942, Mr. Norris was first in charge of cast iron boilers and radiators and steel heating boilers, but later was put in charge of the oil conservation program for WPB. For the last 18 months, he has been in charge of the Heating Branch of WPB, responsible for all heating equipment manufactured in this country.

Mr. Norris will make his headquarters in Lafayette.

Lt. Com. J. H. Van Alsburg on leave from Hart & Cooley Manufacturing Company, Holland, Michigan, is returning from the Philippines and is expected to resume employment with the Hart & Cooley Manufacturing Company.

Appointment of J. J. Donovan, formerly New York regional manager of Airtemp Division, Chrysler Corporation, Dayton, Ohio, as eastern divisional manager for the company is announced. Donovan's increased responsibility calls for coordination of all merchandising effort in the Boston, New York, Philadelphia and Washington regions, included in the eastern division.

Robert Friedel moves up to succeed Donovan as New York regional manager.

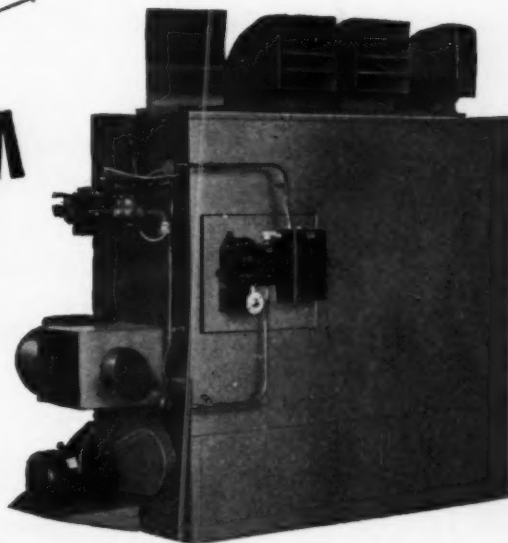
Paul B. Zimmerman of Dayton, Ohio, has been elected executive vice president of the Monitor Equipment Corporation, and vice president of the management company—T. K. Quinn, Inc., both of New York City.

Mr. Zimmerman has resigned his position as vice president, Chrysler Airtemp Division to accept this new post. He was formerly vice president in charge of sales, Norge Division, Borg-Warner Corporation, and before that was general sales manager of the Appliance and Merchandise Departments of the General Electric Company.

### Obituary

The Ferdinand Dieckman Co., Cincinnati, Ohio, announces with profound sorrow the death of their president, Edward H. Hoffeld, on September 29.

Rudy Menk of the Joliet Heating Co., Joliet, Illinois, one of the pioneers in the development of furnace fans and blowers, was taken suddenly ill recently, and passed away on the street. He had been suffering from arthritis for some time. A brother, W. H. Menk, is connected with the Excelsior Heater and Supply Division of St. Paul, Minnesota.



**T**HE new Airtherm Space Heater provides an even distribution of heat to all parts of the building through high velocity nozzles — is installed with a minimum of installation costs and requires practically no maintenance.

The new Airtherm Space Heater is available in 3 models — for floor mounting (as illustrated) or horizontal or vertical suspension. Choice of gas or oil burners on all models. Capacities from 650,000 to 1,950,000 BTU's per hour.

Write for bulletin describing this new, efficient, money-saving heater, in detail.

**AIRTHERM**  
MANUFACTURING COMPANY

706 S. Spring Avenue • St. Louis 10, Missouri

*Constructed*  
**for LONG LIFE!**



**THE SKUTTLE SERIES 300A  
AUTOMATIC HUMIDIFIER**

● Here is an automatic humidifier that is designed and built to give longer service to the home owner. Its tank and valve assembly is made of pure copper and brass while the evaporating pan is vitreous enameled.

Just compare the features of this Skuttle 300A Humidifier with all other makes and you'll agree with thousands of furnace dealers and manufacturers that here is a humidifier that operates without continual servicing.

● **PROMPT SHIPMENT** is assured.  
Write us today for prices.

**FEATURES**

- 1 Adjustable collar for use on all types of bonnets.
- 2 Large inspection door for easy removal of evaporating pan.
- 3 Evaporating pan is completely inside furnace.
- 4 Rear support is adjustable and tight fitting to prevent leakage.
- 5 Anti-siphoning valve, standard equipment, at no extra cost.

517 E. LARNED

*Skuttle Mfg. Co.*

DETROIT 26, MICH.



**WITH A LONG AND  
CONTINUOUS RECORD OF  
SUCCESSFUL CONTRIBU-  
TIONS TO THE VAPORIZING  
OIL BURNER INDUSTRY ...**

*Now Announces* **THE REVOLUTIONARY NEW**

**magic pilot**

**FOR MAINTAINING A  
CONSTANT PILOT FEED  
INDEFINITELY**



*Improving...*

the successful operation of Vaporizing Oil Burning Appliances has always occupied much of the engineering thinking at "A-P". As a result, manufacturers of this equipment have acquired the habit of coming to "A-P" with all their control problems. This has created an impressive list of "firsts" in the industry that have constantly offered the dealer *greater profit opportunities*.



**HAS BEEN First...**

- to offer Custom-Calibrated Metering
- to provide Control with the Viscosity Selector
- to furnish Control with Electric Conversion Top for Automatic Temperature Regulating
- to develop the "Oil Lifter" to pump oil from remote storage to heater
- to develop successful automatic control for Vaporizing Oil Burning Hot Water Heater
- to equip with Automatic Temperature Control, adding EXTRA profit-making devices without need for troublesome changes or adjustments.



**NOW OFFERS** the new "MAGIC PILOT" in the "A-P" Constant Level Oil Control — maintaining a constant pilot feed indefinitely.

Completely revolutionizing the automatic control of oil-burning water heaters, floor furnaces and furnaces, this new "A-P" MAGIC PILOT maintains a constant pilot flame indefinitely by automatically controlling the oil flow required by the low-burning pilot. The oil flow orifice prevents clogging and oil waxing.

Again, "A-P" advanced thinking and engineering provide new applications of automatic heat control — bring new markets, greater profits to manufacturers and dealers of vaporizing burning appliances. Write for bulletin describing the new, service-free "A-P" Oil Control with "MAGIC PILOT."

**AUTOMATIC PRODUCTS COMPANY**

2452 NORTH 32nd STREET • MILWAUKEE 10, WISCONSIN



**DEPENDABLE**

*Oil Controls*

"A-P" CONTROLS ARE DESIGNED TO ELIMINATE SERVICING!

## *With the Manufacturers*

### **Coleman Increases Space**

A three-story brick and concrete addition to the Coleman Company, Inc., factory in Wichita, Kans., will add 27,000 square feet of floor space to facilities now devoted to the manufacture of Coleman home heating appliances. The building will be completed by January 1.

Coleman has also leased a modern factory building to be used in the manufacture of gas floor furnaces.

When added to existing plant facilities the two buildings will be a major factor in enabling the Coleman Company to triple its prewar output of home heating appliances.

### **Oil-O-Matic Service Training Schools**

Williams Oil-O-Matic Division, Eureka Vacuum Cleaner Company, Bloomington, Illinois, has been holding a series of two-day factory schools, recently conducted in Springfield and Boston, Mass., New York City, Philadelphia, and Richmond, Virginia. The series was directed by N. A. Palmer of the factory technical staff.

Attendance at the Boston meeting numbered 165 Oil-O-Matic service men.

The five eastern training sessions mark the beginning of a series to be extended throughout Williams Oil-O-Matic's field of operations.

### **Lau Blower Plant Expansion**

Lau Blower Co., Dayton 7, Ohio, has acquired a spacious two-story building in Dayton, just five blocks from their present plant, which will practically double present manu-



facturing capacity. This \$175,000 plant expansion will greatly increase the production and warehouse facilities, and speed delivery service on standard equipment, the new postwar blower, and a blower wheel, details of which have not yet been divulged.

Ed B. Lau is president of the concern.

### **Majestic Acquires Flashing Patents**

The Majestic Flashing Company, division of The Fingles Company, Reisterstown Road at Elgin Avenue, Baltimore, Maryland, announces the acquisition of the patents and trade-marks covering Cheney 3-Way Thru-Wall Flashing, formerly manufactured by the Cheney Company of Ardmore, Pennsylvania and Trenton, New Jersey.

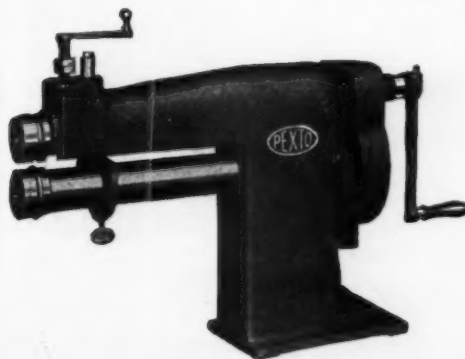
The Majestic Flashing Company will continue the production of 3-Way Thru-Wall Flashing as heretofore and, in addition, will manufacture the Cheney type of flashing. Both Cheney and Majestic flashing are fabricated from copper.

While final details for the distribution of Majestic and Cheney Flashing have not been announced, it is expected that these two types of flashing will be supplied by leading wholesale sheet-metal houses or manufacturers and distributors of sheet copper.

# PEXTO

## IT'S A NAME-BRAND IN SHEET METAL WORK

With industry having the "go-ahead" signal . . . this pioneer builder of Machines and Tools for sheet metal fabrication . . . looks ahead! PEXTO'S complete line has been proven . . . for strength . . . for accuracy . . . for long service life.



NO. 0617 HAND BEADING MACHINE

THE PECK, STOW & WILCOX COMPANY — Since 1785 — SOUTHINGTON, CONNECTICUT, U. S. A.

## RECONVERSION!

... but there's a "catch" in it! Availability of materials will govern production of PAYNE Furnaces

Relaxation of Government controls is one thing; obtaining necessary materials and equipment, another. ★ We wish we could give a positive answer to every inquiry about deliveries, and fill every order promptly and completely. However, as we struggle to catch up with our backlog, there are bound to be some disappointments. We can only say this: As fast as materials and transportation facilities are obtainable, PAYNE Furnaces will roll from assembly lines to dealers. ★ We shall carefully allocate production among our distributors and dealers. Thank you for your patience!

**PAYNE FURNACE COMPANY**  
(One of the DRESSER Industries)  
BEVERLY HILLS, CALIFORNIA

WORTH WAITING FOR  
PAYNE Floor Furnaces;  
"Zoneair", "Sentry" and  
"Spacesaver" Forced Air  
units; Gravity Furnaces;  
other PAYNE products.

PAYNE ZONE-CONDITIONING  
— Successor to old-fashioned  
central heating. Request  
FREE booklet.



**PAYNEHEAT**  
OVER 30 YEARS OF LEADERSHIP



# NOW AVAILABLE

PIONEER OF THE STOKER  
INDUSTRY... ONE OF THE  
LEADERS IN NATIONAL  
SALES VOLUME!



• T-3 (30 POUNDS)

• T-5 (50 POUNDS)

## Domestic Models

OF

# FREEMAN

LONG-LIFE  
STOKERS

FIRST CHOICE OF AMERICA'S  
FOREMOST HEATING ENGINEERS

Good news for dealers who want to start cashing in on the greatest sales boom in stoker history! Get set now with Freeman... give yourself the competitive advantage of our established leadership, complete line, the unequalled service and co-operation of the foremost plumbing and heating distributors in the country! Get the facts today...

**FREEMAN STOKER DIVISION  
ILLINOIS IRON & BOLT CO.**

918 S. MICHIGAN AVE., CHICAGO 5, ILLINOIS

## With the Manufacturers

### Air Control Products Expands

Air Control Products, Inc., Coopersville, Michigan (manufacturers of a line of registers, grilles, ventilators, Airtrol air conditioning units and accessories) announces that construction has been started on a new plant to be located at Grand Rapids, Michigan.

The new plant will be used to expand their present production and to produce new post-war items allied with the heating and air conditioning industry.

The new plant will be of modern construction and will ultimately have 200,000 square feet of floor space. The plant and equipment will be of the latest type and will have assembly bays one block long to provide efficient conveyor line production. It is expected that the new plant will be in operation about December 1st.

Production at the Coopersville plant will be expanded as soon as war production machinery has been moved out and readjustments have been made. The main office of the company will remain at the Coopersville plant.

### Kalamazoo Dealer Support

The Kalamazoo Stove & Furnace Company postwar program of dealer support includes seven projects.

A two-week sales training clinic conducted at Kalamazoo will give dealers a refresher course in store organization, merchandising, advertising, accounting and sales method. Company engineers will interpret technical stove, furnace, heater and refrigerator features.

Retail salesmen will be trained in the store by a special traveling sales training staff. A comparable engineering staff will help set up a pay-for-itself repair and service department in each store and will help train service employees.

A store layout and decorating advisory service will be maintained. A model store will serve as an experimental establishment where methods of display, merchandising systems and other phases of retail distribution will be tried out before being installed in other stores.

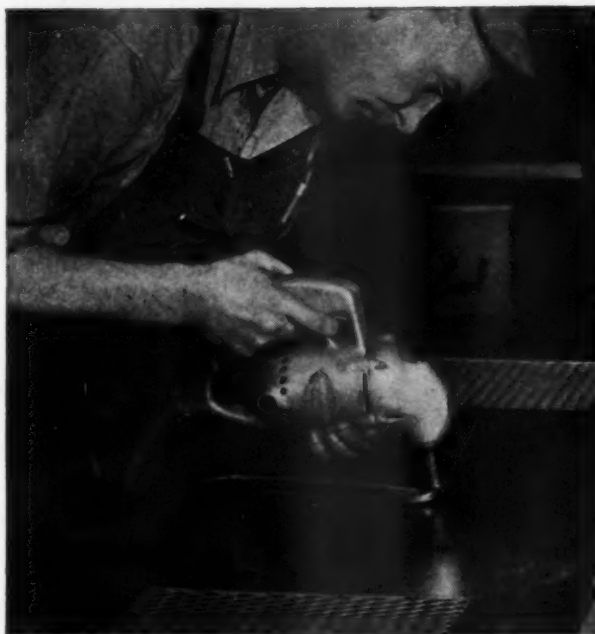
### New Stainless Producer

Washington Steel Corporation, Washington, Pa., has been organized to form stainless steel—both sheet and strip. T. S. Fitch, formerly manager of the Composite Steel Division of the Jessop Steel Company, is president, and F. G. Gerard, formerly plant superintendent of the Eastern Rolling Mill Company, Baltimore, is vice president in charge of operations. During the war Mr. Fitch was a special assistant in the steel division of WPB.

The new corporation has purchased the plant and facilities formerly owned by the Washington Tin Plate Company and will install new machinery to handle stainless steel. The company will specialize in the production of stainless steel strip and sheet in the gauge range of .004 to .078 and up to 36 inches in width.

Other members of the board of directors are E. L. Parker, president, Columbia Steel and Shafting Company; W. F. Crawford, president, Edward Valve and Manufacturing Company, Chicago; G. E. Diamond, former controller of the Jessop Steel Company; J. H. Davidson, Washington, Pa., attorney; Henry Hood, partner of Henry G. Hood and Sons, Washington; J. B. Warden, vice president and trust officer, First National Bank at Pittsburgh; and Guy Woodward, Washington.

A new and improved type of cold rolling mill—a 39-inch cluster type—will be installed. This mill will make it possible to produce a uniform strip with a high strength-to-weight ratio. The mill is designed to eliminate flexing of the rolls by a system of multiple-backing rolls and bearings within a solid housing. This feature permits equal pressure to be exerted along the entire length of the work rolls, thus producing a more uniform product. The rolls function in a bath of oil, which is filtered and cooled, so that frictional heat is dissipated and uniform temperature can be maintained.



30% SAVING IN COSTS and a 500% increase in production are reported by this user of 16-Gage Electric "Porto-Shears."

## Don't Snip... Add Zip to Sheet Metal Cutting with Black & Decker Electric "PORTO-SHEARS"

Black & Decker Electric "Porto-Shears" zip through jobs that are slow with snips... cut metals too tough for snips... make clean, smooth, accurate cuts with a big saving of time and trouble. Fast, powerful shearing action. Cutting operation always visible. Easy to follow straight lines, irregular patterns or curves down to  $\frac{3}{4}$ " radius.

Two "Porto-Shears" models—16 and 18 gage—cut up to rated capacity in steel or galvanized iron... about one gage thinner in Monel or stainless... 50% above rating in copper, aluminum, lead and other non-ferrous metals. Operate on A. C. or D. C.

See your Black & Decker Distributor about "Porto-Shears" and other electric tools for sheet metal work, or write to: The Black & Decker Mfg. Co., 682 Pennsylvania Ave., Towson 4, Maryland.

LEADING DISTRIBUTORS EVERYWHERE SELL

# Black & Decker

PORTABLE ELECTRIC TOOLS



ELECTRIC DRILLS



ELECTRIC SANDERS



BENCH GRINDERS



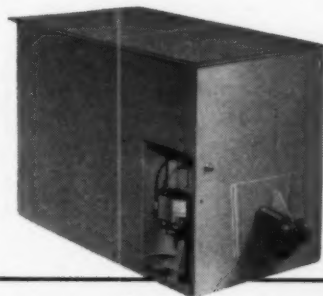
WIRE BRUSHES

APPLIANCES *worthy* OF YOUR  
POST-WAR HOUSES



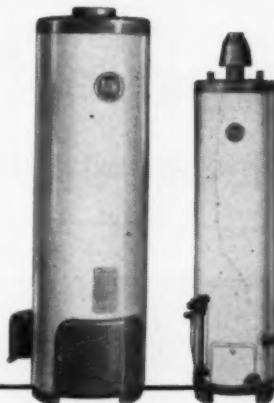
\*Always Good Merchandise!

### AGM FLOOR FURNACES



New, horizontal burner design drastically reduces floor-furnace depth—only 28" from top to bottom. No "ground water" or seepage problems. Little or no excavation required. Please write today for literature and franchise information.

### AGM WATER HEATERS

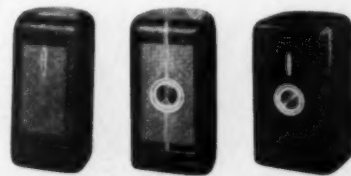


20 and 30-gallon oil and gas-fired automatic storage type heaters. Oil has exclusive Econolite pilot burner requiring only .6 gallon of fuel oil in 24 hours. Gas has cast aluminum slotted port burner. Finest construction and controls, beautiful new styling, yet competitive prices! Please write.

AGM is the maker of famous "Sun Flame" oil heating stoves known all over America for dependable performance.

write AGM

We will be pleased to send full details of our appliances.



AMERICAN GAS MACHINE COMPANY

ALBERT LEA, MINN.

Continuous Manufacturing Experience Since 1896

## For Every Type and Size of Installation *CSE* Provides the RIGHT DRAFT CONTROL

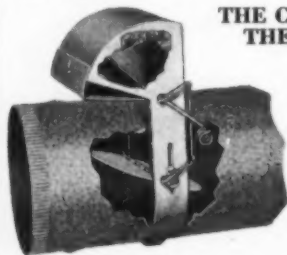
The Heating Season Is Here Right Now.

### SELL THEM NOW!

Draft-Korektor, Type F, 900 series, a low cost, open check control for coal and oil-burning installations. Outstanding features include simplified outside draft adjustment; rust-proof, positive locking and fool-proof.



### THE COLE DRAFT GOVERNOR—THE LEADING OIL BURNER CONTROL—



is an internal damper type regulator. Can be installed on any angle without taking down pipe-sizes from 5" to 18," additional saving over any other type of control. THIS IS A PROVEN FACT.

Order Today—Prompt Delivery

**Cole-Sullivan Engineering Co.**

1318 No. Third St., Minneapolis 11, Minn.

*Fuel Saving Starts With*  
**CONTROL**

## Zideck—Fabricating Truck Body Parts

(Continued from page 145)

the radial. As seen in the picture, the upper die is constructed for one size only of bead or radial and it may be that the cost of such a die construction would not exceed the cost of an all-steel die supplied by the manufacturer.

In the building of delivery bodies, which we describe here, the metal used is largely of a heavier gauge than could be successfully worked by makeshift means. The shop owner who goes into the business of constructing bodies for delivery vehicles will find this a specialized business for which it will pay him to

## Always First — Again Available Super-Red Streak Furnace Cleaners

First Super Furnace Cleaner made —September 1928.

First to supply specialized chimney cleaning equipment, bringing a fine new business to Super-Red Streak owners.

First to provide a "Plan Book" showing how to profitably organize and operate a heating plant service business.

From the very first a big strong rugged motor running underloaded assuring years of trouble-free operation.

We are filling orders — strictly in the order in which they are received.

**National Super Service Company, Inc.**

1946 N. 13th St.  
Toledo 2, Ohio



Have you tried **TRANSITE IW FLUE PIPE** for venting coal and oil burning equipment?



**H**ERE'S a flue pipe developed especially for venting coal and oil burning domestic heating equipment. A Johns-Manville asbestos-cement product, it is strong, durable and *completely rustproof*. Yet Transite IW is light in weight, easy to handle and install. You can cut it to fit right on the job.

Transite IW Flue Pipe is available in a wide range of sizes, with a complete line of fittings. Why not give it a try? At your distributor's—or write Johns-Manville, 22 E. 40th Street, New York 16, N.Y., for details.

**And for venting gas burning equipment...**

Use *Standard* Transite Flue Pipe. Companion product to Transite IW, it offers the same outstanding advantages and is available at your distributors.

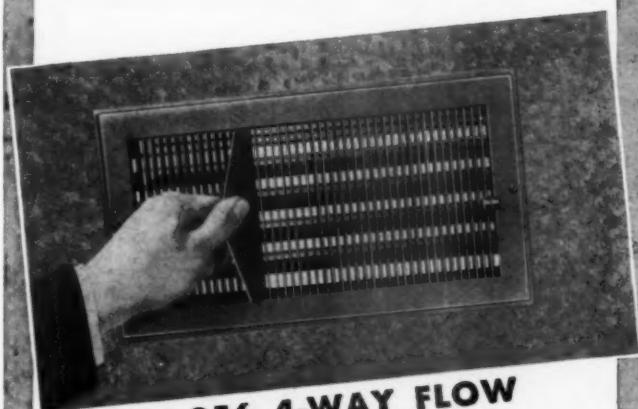
**Johns-Manville  
Transite IW Flue Pipe**



## UNEQUALLED VALUES

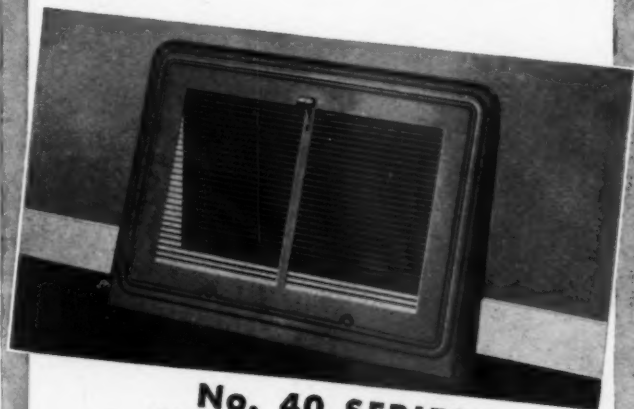
IN THE REGISTER INDUSTRY

WE ARE IN PRODUCTION now as fast as  
materials and manpower permit.



### No. 256 4-WAY FLOW AIR CONDITIONING REGISTERS

Complete, versatile control with a beautiful exterior. Stand-  
ard Setting of Vertical Grille Bars 22° half right half left  
flow may be easily reset it desired with Handy Setting  
Wrench. Lever-operated horizontal rear valves for up or  
down deflections.



### No. 40 SERIES GRAVITY BASEBOARD REGISTERS

Most Modern of Gravity Baseboard Registers. Two piece  
with removable face—equipped with Twin Buttons for  
attachment. No loose screws. Grille Bar setting affords  
non-vision and straight flow through register grille.  
Send for latest catalogs.

**UNITED STATES REGISTER CO.**

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

# Make Them Last!

INSTALL

## Northwestern REPAIR PARTS

You'll find it increasingly diffi-  
cult to obtain new equipment and  
materials for quite awhile yet. In the  
meantime your customers who normally  
would have replaced their aged heating plants,  
etc., within the past three and four years must keep  
right on trying to *make them last* until new models be-  
come available.

It's *your* job to "make them last", too! Your customers  
have come to depend on *you* to keep the old plant in oper-  
ation and you'll go right on doing it in your usual first-  
class manner when you install guaranteed NORTHWEST-  
ERN Repair Parts.

NORTHWESTERN has always provided the best in re-  
pairs. Guaranteed-to-fit parts are yours quickly, eco-  
nomically and with the same old reliable NORTH-  
WESTERN service behind them.

Write today for information on  
the best in repairs . . . to help  
you "MAKE THEM LAST!"



*for the*

## BEST



**NORTHWESTERN STOVE REPAIR COMPANY**

662 West Roosevelt Road, Chicago 7, Ill.

# Insulate DUCT RESIDENTIAL WORK

Apply asbestos protected DUX-SULATION, the all-purpose insulation and get the many benefits a fine insulation provides, plus those DUX-SULATION alone can provide.

Pictured at right shows attic ducts covered with money saving DUX-SULATION.



Lower fuel consumption and greater cleanliness result from DUX-SULATION protected ducts in homes such as above.

DUX-SULATION saves 75% of the bare duct heat loss—has high thermal insulating efficiency of 70% (K factor .27 B.T.U.). Is  $\frac{1}{2}$ " thick and has smooth surface giving exceptionally low frictional resistance ( $F = 0.0001322$ ).

DUX-SULATION also deadens metallic noises when applied to outside of ducts and will absorb 70% of air borne noises in less than 10 lineal feet of lined duct.

DUX-SULATION comes complete—nothing else to buy—36" wide roll contains 100 sq. ft. Quick and easy application. Shipped complete with sufficient adhesive to glue the felt on to metal duct surfaces and special tape for corners and joints.

You and your customers will benefit by getting the full story that is told in our valuable book No. A404. Just fill in the coupon below and get it in the mail today.

Find out why thousands of Dealers are building an increasingly profitable business thru applying DUX-SULATION to old, remodeled, and new heating plants.

## GRANT WILSON, INC.

141 WEST JACKSON BLVD. AT LA SALLE ST., CHICAGO 4, ILL.  
[22nd Floor, Board of Trade Bldg. Phone: Wabash 8220]

Send Bulletin No. 407-A containing the full story of DUX-SULATION—the all purpose insulation.

FIRM NAME .....

STREET .....

CITY ..... STATE .....

ATTENTION OF .....

procure the best of machines and the most dependable of dies. In such specialized work the dies required will not be too many.

In a jobbing shop doing all kinds of sheet metal forming in small quantities and never knowing what will be needed next, there is less room for special dies, doing only one operation and that of one certain size or shape. In these shops it is best to employ "adjustable" dies, when obtainable, or construct something that can be used in a variety of forming work. The use of soft rubber, whenever it becomes available, for radial work in substitution of a variety of sizes of the female die, obviously is the first idea to be considered by the jobbing shop. Then, soon there will be certain dies offered to the trade made of "Kirk-site," which can be shipped back to be melted and formed into another die.

## Bremil PORTABLE SHEARS



Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to  $\frac{1}{4}$ " steel plate.

ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

BREMIL MFG. CO., ERIE, PA.

WHEN YOU THINK OF HEATING, THINK OF



## GAS FURNACES

*made in palm-lined  
Phoenix, Arizona*

A new brand-name to help you remember this quality line of gas heating equipment, in sizes and types for every need.



Palmer furnaces range in size from wall and floor furnaces for small homes to the large central heating forced air furnace (as shown) for stores and factories.

Write for free folder.

**Palmer**  
MFG. CORP.  
PHOENIX, ARIZONA

# TRIANGLE SHOCK ABSORBING PILLOW BLOCK

Designed by Triangle engineers for fans, blowers and other devices requiring silent operation, perfect alignment and self-lubrication.

Preloaded oil-proof cushion built into the bearing. Ball-and-socket design.

Write for samples and complete information.



**TRIANGLE MANUFACTURING CO.**

392 DIVISION STREET

OSHKOSH, WISCONSIN



Sheet metal men everywhere are turning out accurate work quickly and easily with Niagara machines and tools for shearing, blanking and forming sheet metal.

**NIAGARA**

MACHINE & TOOL WORKS  
BUFFALO 11, N. Y.

District Offices:  
Detroit, Cleveland, New York

USE  
*Peerless Electric*  
**BLOWER ASSEMBLIES**  
in your  
**FURNACES and CABINETS**



**TWO TYPES**

**BOTH *Peerless Electric***

Belt drive assemblies with either top or rear mounted motor—with resilient bases to prevent vibration. Direct drive assemblies use specially-designed Peerless Electric capacitor motors—exceptionally efficient and quiet. Blower wheels, directly connected to motor, are forward curved, dynamically and statically balanced.

**E**ELIMINATE service worries by installing Peerless Electric blowers for winter air conditioning and forced air heating.

Peerless Electric blowers—belt and direct drive types—are designed and engineered from more than 50 years of experience in building quality motors and electrical apparatus. Peerless Electric equipment is complete—manufactured entirely in our own modern plant—not an assembled line—and priced right, offering bigger profits to you.

*Write for detailed information.*



**DIRECT DRIVE**

*Peerless Electric*  
**AIRBOY PACKAGE UNIT**

Delivers 850 cfm, sufficient for a house of approximately 10,000 cu. ft.; 3-speed motor with motor blower unit rubber cushioned. Blower wheel dynamically and statically balanced; a very compact unit. The two motor bearings are the only bearings in the unit.

**THE *Peerless* ELECTRIC COMPANY**  
WARREN, OHIO  
Established 1893

**Konzo—Making  
A Plant Layout**

(Continued from page 131)

fittings would be required. A layout man who has not had much field experience will find it essential to show the plan to the sheet metal installer and obtain his suggestions. We do emphasize the fact that spending a few extra minutes at this stage will repay big dividends in time and money. The best way for you to gain experience in laying out duct systems will be to critically inspect actual installations or prints of layouts made by others.



**REPAIR PARTS  
FOR ANY  
FURNACE, BOILER  
OR STOVE**

*Complete Line of  
Sundries and Supplies*

**FOR QUICK SHIPMENT**

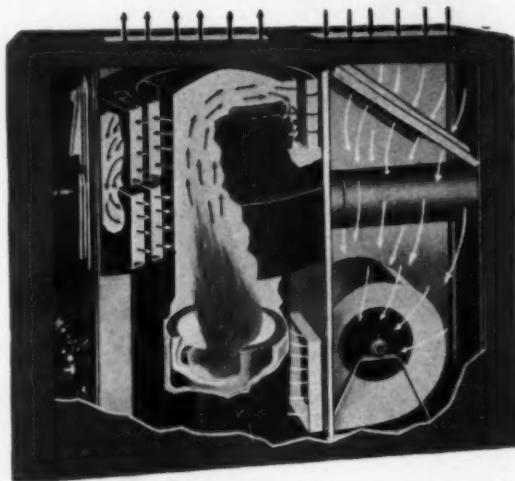
**OMAHA STOVE REPAIR WORKS**

1206-8 DOUGLAS ST.,

OMAHA 2, NEB.

SINCE 1882

**THIS is a RADIATION FURNACE**



**T**HE Radiation Furnace has been on the market for the last ten years, and has proved to be the most efficient unit.

In the Radiation Furnace hot gases are directed so there is a continuous flow from the upper to the lower set of steel radiator flues which absorb and transmit the heat to the

home before it escapes through the chimney. It is also provided with a safety in case any control should go wrong. It has ample cleanouts, so that every square inch of the flues can be easily cleaned. It has an observation window and a repair opening to the Combustion Chamber. Write for complete details today.

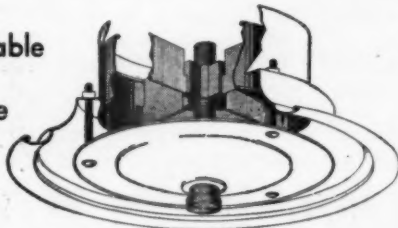
**RADIATION FURNACE CORPORATION**

BENTON HARBOR, MICHIGAN

## Control of air direction and volume as an aid to satisfactory supply air diffusion

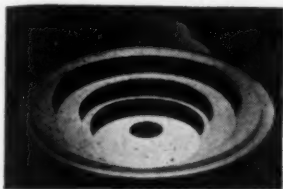
Whether they are used in heating, cooling, ventilating, or combined systems, KNO-DRAFT Diffusers can be adjusted quickly and accurately for system balancing and individual or seasonal requirements. As a result the factors of temperature variation, temperature fluctuation, drafts and noise can be minimized considerably.

Type K Adjustable Diffuser with Type D Volume Damper for supply air.



Pat. and  
Inst. pending

Any desired condition at your fingertip.



Type SR Adjustable Diffuser for supply and return air.

By simply turning the air adjustment screws (easily accessible from under the unit) the inner cone may be raised or lowered to secure any angle of air direction required. A built-in damper, with which either model can be equipped, varies the outlet aperture uniformly without affecting the outlet velocity or diffusion pattern. Thus, the air direction and volume of the same KNO-DRAFT Diffuser can be adjusted to be equally effective in expelling chilled air parallel to the ceiling or ejecting heated air downward to prevent stratification.

With KNO-DRAFT Adjustable Diffusers many engineers have been able to insure efficient air distribution, maximum premixing of room and supply air, noiseless and draftless diffusion and uniform temperature throughout the occupied zone. And they have been able to reduce labor and sheet metal costs by distributing large volumes of air at higher duct velocities in smaller, simplified ducts with fewer outlets, because KNO-DRAFT Diffusers permit the use of higher neck velocities.

The W. B. Connor Engineering Corp. maintains a staff of specialists and district representatives in leading cities to assist you with any air distribution problem.

### FREE HANDBOOK

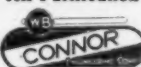
Contains clear sketches, charts, dimension prints and instructive text that simplify the selection and installation of air diffusers. For your copy write Dept. J-9.



## W. B. CONNOR ENGINEERING CORP.

Air Diffusion  
114 E. 32nd Street

Air Purification



Air Recovery  
New York 16, N. Y.

## FOR VITALIZED HEAT *Convector* HUMIDIFIER

In sizes to meet requirements of largest to smallest warm air furnaces. Now available for straight bonnets



When furnace check-ups reveal a need for humidifier replacement, or when new furnaces are indicated, install the Convector Automatic Humidifier. You not only make more money, you assure your customer more reliable and efficient humidification, even at low temperatures.

The Convector consists of one, two or four copper troughs built into a compact unit and fitted with highly absorbent patented evaporator pads, assuring free flow of moisture to exposed evaporating surfaces. This exclusive construction, together with the spacing of the troughs to permit unrestricted air flow, results in maximum evaporation.

Corrosion resisting materials. A non-back-siphoning automatic water feed valve, approved by National Plumbing Laboratory, guards against contamination of domestic water supply.

Convactor models are now available for straight bonnets in fourteen sizes with single or multiple troughs from 15 to 34 inches. The units are easily installed and easily removed for servicing.

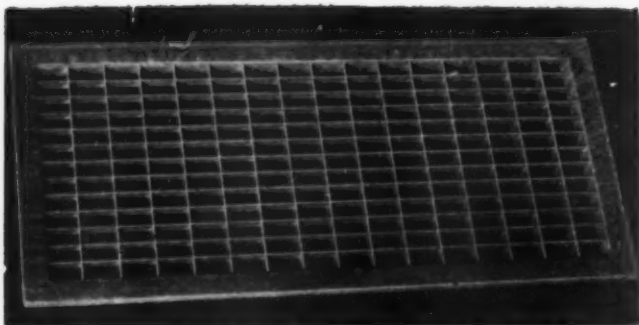


On your new designs, hold up final specifications until you get the facts about our new, improved automatic humidifier. Send us your name so that full information can be sent to you as soon as specifications and materials are ready.

## MAID-O-MIST INC.

3213 North Pulaski Road  
Chicago 41, Ill.





H & C No. 265 "NO-FLEX" Return Air Face.  
Rugged, Heel-proof, Rigid and Good-Looking.

*Watch Your Sizes  
on Return Air Faces!*

Service-wise, you will find it definitely to your advantage to plan on using only those sizes of Return Air Faces recommended by the National Warm Air Heating and Air Conditioning Association, in Section 5 of its New Code and Manual for Gravity Warm Air Systems. These are as follows:

**H & C No. 265 "NO-FLEX" Return Air Faces**

6x30	10x30	14x24
8x14	12x14	14x30
8x24	12x24	18x24
8x30	12x30	18x30
10x12	14x16	20x30
10x24		

**Air Conditioning Line Alternate Sizes**

4x14	6x12
6x10	6x14

For best service during this critical period order strictly in conformity with Bulletin S-121, showing our post-war line of registers and furnace accessories. Bulletin S-121 replaces the former Bulletin S-95. Ask your jobber or write us for a copy. Current Catalog is No. 42.



**HART & COOLEY MANUFACTURING CO.**

*World's Largest Manufacturers of  
Registers, Grilles, Furnace Accessories*  
**HOLLAND • MICHIGAN**

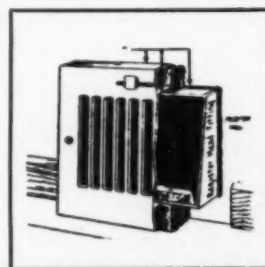
**Partnership  
Or Corporation**

(Continued from page 122)

holders and corporation will get the usual, careful going-over to which all transactions between related taxpayers are subjected.

Where profits are so small that they can provide only a reasonable compensation to stockholders or cover other expenses to stockholders, the corporate form of business gives the owners the legal advantages of a corporation without incurring any of the federal tax disadvantages. The corporation pays no

**MILLIONS WANT IT!**



**Get this profitable  
STREEKNO business  
NOW!**

**STREEKNO**  
eliminates dirty, streaked walls.  
Easy to Install. **HERE'S PROFIT  
FOR YOU—**  
Cost of Material—12 Register  
Packings ..... \$ 6.60  
Plus 5 to 10 minutes install-  
ing time per register; your  
charge to Customers for  
12 Registers ..... \$24.80

**YOUR PROFIT ..... \$17.40**

Order from your Jobber or write for Literature and Details

**EXCEL HEATING and AIR CONDITIONING CO.**  
3715-19 Belmont Ave. Chicago 18, Ill.

**H&C DAMPER REGULATOR SETS**



No. 40 1/4 S

**ECONOMY TYPE.** Three ways to install: 1. With lock nut but without handle (for tamper-proof setting). 2. With handle and lock nut. 3. With handle and wing nut. Nut prevents damper vibration. Handle always indicates position of damper (Patent 2,146,142). Furnished with handy snap end bearing. Complete set in carton. Made only with 1/4" bearings.

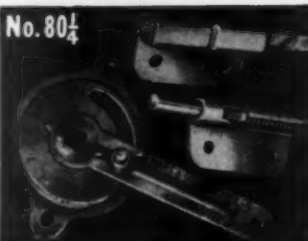
**LIST PRICE.....No. 40 1/4 S.....\$0.30**



No. 50 1/4

**BRACKET TYPE.** Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on 1/4" size. Solid Bearing on 3/8" size. Each set individually packaged.

**LIST PRICES.....No. 50 1/4.....\$0.40  
No. 50 3/8 .....\$0.60**



No. 80 1/4

**DISK TYPE.** Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on 1/4" size. Solid Bearing on 3/8" size. All parts are rust proofed. Complete set in carton.

**LIST PRICES.....No. 80 1/4.....\$0.40  
No. 80 3/8 .....\$0.60**

*See your jobber or write  
for literature and sample.*

**HART & COOLEY MANUFACTURING CO.**  
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.

# Something NEW!

VITROLINER

## BREECHING PIPE

(SMOKE PIPE)



VITROLINER is a new LONG LIFE breaching pipe for connecting heating plant to chimney and will give many years of trouble free service. Eliminates the expense and bother of frequent replacement. A complete line of fittings makes any hookup possible and can be easily and quickly installed. VITROLINER eliminates the fire hazard of corroded pipe. VITROLINER is made of heavy gauge steel completely coated inside and outside with porcelain to prevent corrosion. VITROLINER'S porcelain finish is attractive and adds to the beauty of any room.

**SPECIAL FEATURES:** The Telescope section of adjustable in length and is used to fill in any odd length not accommodated by standard lengths. Eliminates need for cutting pipe. Installed at chimney end of breaching pipe.

The Vitroliner damper section has a cleanout hole covered with a sliding sleeve. The cleanout hole is also used for installing a barometric or check damper. Small holes also provided for butterfly damper.

Vitroliner is easily installed and is ideal for venting dust, gas, corrosive fumes, paint spray, etc.



*protects*  
**MASONRY CHIMNEYS**

**VITROLINER**  
-the Superior Vent Pipe-



**VITROLINER CHIMNEY LINER CREATES MORE DRAFT**

The porcelain surface of the liner is smooth, even, and is quickly heated and cooled. In less than 5 minutes the temperature is up to efficient operating temperature, thus providing an excellent draft and complete combustion in the heating plant. When heating plant is off, the liner cools immediately, and there is no draft to draw heat from the house. The Vitroliner liner is not harmed by acid condensation present in oil or gas-fired plants.

VITROLINER LINER can be installed in existing chimneys, easily and quickly—prevents chimney deterioration caused by condensation. Inspection of thousands of brick chimneys proves that an acid resisting chimney lining is necessary to protect the brickwork.

VITROLINER CHIMNEY LINER is heavy gauge steel, double coated inside and outside with acid resisting porcelain fused into the steel at 1575° F.

VITROLINER will correct DEFECTIVE LINING, SMOKE BACK, LEAKY BRICK JOINTS, and POOR DRAFT. Can be easily installed in straight or offset chimneys. All sections are made on dies and the bell and spigot joints insure an accurate and uniform fit.

Write for further information on sizes, prices, etc.

**CONDENSATION ENGINEERING CORPORATION**  
122 S. Michigan Ave. Chicago 3, Illinois



## The quick, profitable way ... is the FIRELINE way

Cracked, worn out firepots can be made like new for winter in quick-time with Fireline, the plastic, putty-like refractory that is installed through the furnace door, quickly and easily. It seals cracks and holes in the firepot castings, stops leakage of gas, odors, and dirt into the building. By increasing combustion efficiency, it makes the old firepot a better heat producer than when new. In fact, Fireline is extensively used to increase the heat delivery of new furnaces and to protect good firepots.

The alert furnace man who keeps a drum of this high-quality refractory on his truck has firepot problems licked. In a few hours, he can line any firepot with Fireline, then the fire can be rebuilt immediately. Thus he can repair leaky furnaces right in the middle of winter—keep busy all year.

With Fireline you can handle more repair jobs. You save your customers money. You make a higher profit percentage.

Take the Fireline shortcut to more profitable furnace repairs.

### FIRELINE STOVE & FURNACE LINING CO.

1816 Kingsbury St.

(Dept. J.),

Chicago 14, Ill.

#### Fireline Stove and Furnace Lining

You merely pound Fireline into place with a hammer, smooth it off, and rebuild the fire. When the fire has baked it out, Fireline is a lasting lining that will take temperatures up to 3000 deg. F. It is also used in steel furnaces, for setting stokers, and for oil burner combustion chambers.



#### Two other products you should know

**Ironset Asbestos Furnace Cement**—The high-quality cement for setting up new furnaces and recementing old ones. Withstands higher temperatures; will not crack, shrink, bloat or blister. Makes your work more permanent. (And your customers, too.) Prove its superiority on your next job.

**Fire Hearth Castable Refractory**—The ideal material for setting stokers and building oil burner combustion chambers. Just mix and pour—then trowel it smooth. Conforms to any shape; air-setting; does not shrink, crack, or crumble.

#### Keep a Drum on the Truck

Make every minute on the job count; avoid those unnecessary return trips to the shop. Keep a drum of Fireline on the truck, so you can go right to work on any job that turns up. Write for bulletins, prices, and name of nearest jobber.

# FIRELINE

STOVE & FURNACE LINING

**BOOST PRODUCTION SCHEDULES WITH**

## MARSHALLTOWN THROATLESS SHEARS

★  
**CUT ANY SHAPE**  
★  
**CUT ANY SIZE  
SHEET**  
★

Here's just the Shear that offers every feature you want. It does hundreds of odd shearing jobs better and faster—yet is an inexpensive hand operated tool. No matter what type of cutting—either irregular shapes or straight splitting—from ANY size sheet, you'll quickly find that the Marshalltown Throatless Shear is the most profitable tool in the shop.



No. 18  
HAND  
POWER

Get Special Shear Bulletin today. Gives details of sizes from 18 gauge to one-half inch capacity.

**MARSHALLTOWN MFG. COMPANY**

920 E. Nevada St., Marshalltown, Iowa

income or excess profits taxes since all the profits are used to pay stockholders expenses. The stockholders pay a tax on the entire income of the corporation which is distributed as salary or expenses. For corporations with larger income this solution is obviously not possible and is often not advisable.

Partnerships present no problem of profit withdrawal. In the division of partnership income, a partner may be allowed a "salary," interest on capital, or a bonus; but regardless of the name, the entire amount credited to the partner is treated as merely a share of the income. Since there is no employee-employer relationship between a partner and his firm, a partner is not considered to have received any salary.

(Part 3 will follow.)

## PLANING MILL EXHAUSTERS



SEND FOR DETAILS  
including performance  
and dimensions  
in Catalog 410.

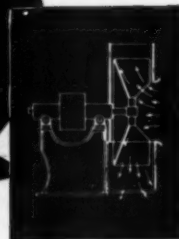
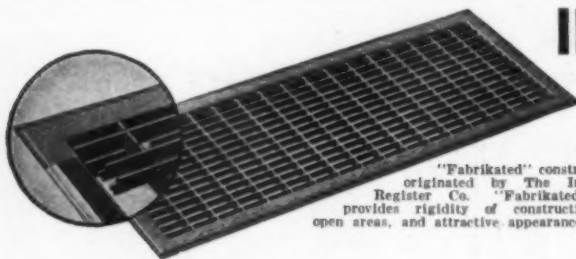


DIAGRAM shows how special streamlined inlet deflects air stream so as to reduce turbulence and back plate erosion.

**RESULT:** higher overall efficiency, lower maintenance cost, less time out for service and repairs.

**B. F. STURTEVANT COMPANY**  
HYDE PARK BOSTON 36, MASS.



## INDEPENDENT "FABRIKATED"

(Reg. U. S. Pat. Off.)

Style  
No. 132

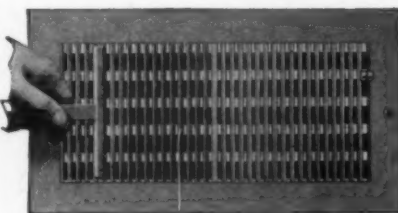
"Fabrikated" construction was originated by The Independent Register Co. "Fabrikated" design provides rigidity of construction, large open areas, and attractive appearance.

**Registers · Grilles  
· Cold Air Faces ·**

*...and wrought  
steel registers  
with flexible  
grille bars..*

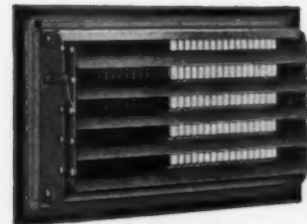


★  
Always Leading  
Always Progressing



No. 238

Adjustable four-way direction of air flow. The vertical grille bars are formed from sheet metal and set at an angle of 30 degrees;  $\frac{1}{2}$  to the right and  $\frac{1}{2}$  to the left. The bars may be bent to direct the air flow to any other right or left angle or straight outward. Openings between bars,  $\frac{1}{4}$  inch.

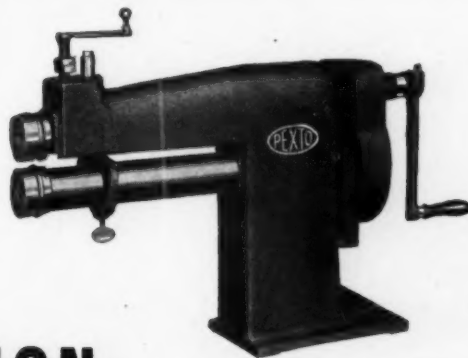


Horizontal Multiple Valves

Simple out-of-sight valve control not easily tampered with. A quarter turn of the valve control screw located near the opening lever will set the valve to direct the air flow either up or down or straight outward. These valves may be fully closed from any directed flow setting.

**THE INDEPENDENT REGISTER CO.**

3747 EAST 93RD STREET, CLEVELAND, OHIO



No. 0617 BEADING MACHINE  
CAPACITY — 18 gauge soft steel

... a **TRADITION**  
*for* **160 YEARS...**



No. 0601 CRIMPER and BEADER  
CAPACITY — 18 gauge soft steel

... because right from the start ... in 1785 ...  
PEXTO Machines and Tools pioneered the correct  
equipment for Sheet Metal Fabrication.

And all through the years of this industry's development  
PEXTO has provided the means for faster, more ac-  
curate production ... better work.

THE PECK, STOW & WILCOX COMPANY Since 1785 SOUTHTON, CONNECTICUT, U. S. A.

## If Your Area Has COLD WATER . . .

. . . there's a genuine opportunity with the *Jaden* line of  
cooling equipment. The potential sales are unlimited.

With the *Jaden* line, you'll have the advantage of Profit  
. . . Simplicity of Installation . . . Customer Satisfaction. There is ample  
proof which we would like to place in your hands.

Why not write us for full details, today?

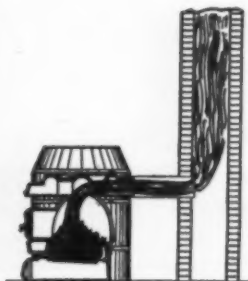
*Jaden*

HASTINGS, NEBRASKA, U. S. A.  
MANUFACTURERS OF AIR CONDITIONING EQUIPMENT

*"Required Reading"*

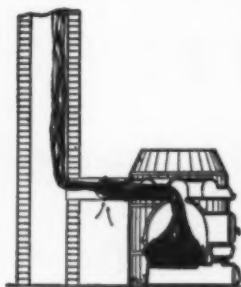
FOR EVERY MAN INTERESTED  
IN HEATING EQUIPMENT  
PERFORMANCE:

## Why Install a Draft Control?



The diagram at left illustrates what takes place in the average heating plant not equipped with a FIELD DRAFT CONTROL. When the chimney draft is greater than necessary for proper draft and combustion, heat is drawn up through the chimney and wasted. Fuel wastes run as high as 25%!

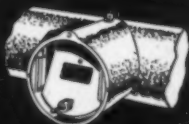
At the right we picture for you the change effected when a FIELD DRAFT CONTROL is installed. The barometric pressure opens the gate, maintaining the proper draft to carry smoke up the chimney, but withdrawing excess draft through the opening created by pressure of the air upon the gate.



SAVE FUEL WITH A  
FIELD  
DRAFT CONTROL

BUY  
U. S.  
WAR  
BONDS

**Field**



CONTROL DIVISION  
of H. D. Conkey & Company — Mendota, Illinois

## Design of Exhaust Hoods

(Continued from page 156)

shaped at will to fit in with industrial processes without affecting the ease of operation. Efficient dust or fume removal may be had with use of relatively small exhaust volumes. This type of system may be used on swing grinders, portable grinding wheels, soldering operations, stone cutting, rock drilling, etc.

In the design of an efficient spray booth, its is essential to maintain an even distribution of air flow through the opening and about the object being sprayed. While in many instances spraying operations can be performed mechanically in wholly enclosed booths, the volatile vapors may reach injurious or explosive concentrations. At all times the concen-

Write for  
Catalog and  
Prices



**SPEED UP ORDERS**  
with a  
**BEVERLY  
SHEAR**

Throatless shears that cut any shape . . . straight, circular or irregular. **FASTER** — Precision — accuracy! Order No. 1 for 14 gauge. No. 2 for 10 gauge. No. 3 for 3/16 inch mild steel and 10 gauge stainless.

**BEVERLY SHEAR  
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3504 West 111th St.  
CHICAGO (43), ILL.

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One of our clients, a prominent air diffusion equipment manufacturer, now has several territories available for representation that offer exceptional opportunities to establish a permanent and profitable business.

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**WESTON-BARNETT, INC.**

*Advertising*

520 NORTH MICHIGAN AVE., CHICAGO 11, ILLINOIS



Tharco Asbestos Furnace Cement performs an almost unbelievable safety job in a huge public utility plant where it is not broken down by temperatures as high as 2500°!



When a furnace cement will stand up under such conditions, you can be sure it will meet all of your requirements for long term heat resistance and adhesion.

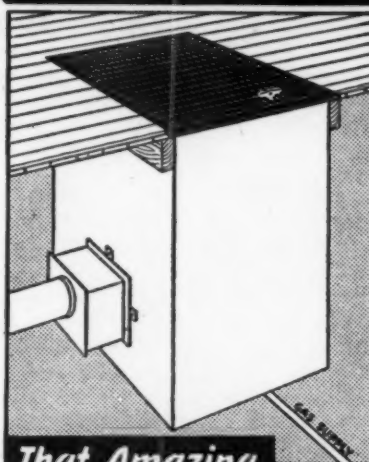
The exclusive Armstrong formula by which Tharco Asbestos Furnace Cement is compounded calls for the finest materials obtainable. Specially prepared asbestos fibre makes Tharco stand up under intense heat and allows for expansion and contraction with the least danger of cracking, shrinking or loafing. Tharco adheres to both sides in a joint, making it gas-tight and smokeless. Tharco is easier to use, is packed in economical "on the job" size containers. Tharco is your safest bet, on every count, for furnace cement. Start using it now!



# JOHN ZINK

One of the largest manufacturers of Gas and Oil Burners in the world manufactures a

## FLOOR FURNACE



That Amazing  
JOHN ZINK  
FLOOR FURNACE



As you would expect this Furnace features a larger, improved combustion chamber and a One-port Non-plugging Gas Burner.

## John Zink Low Pressure Burners

for

DOMESTIC FURNACES  
HEATING BOILERS POWER BOILERS  
GASOLINE PLANT BOILERS

Aggressive Dealers Write for Details

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**NOW YOU CAN GET**

**Blo-Fan**

**CEILING VENTILATORS  
FROM YOUR  
LOCAL WHOLESALE**



ELECTRICALLY licensed heating and ventilating contractors can now obtain Blo-Fan Ceiling Ventilators from their local electrical supply or building material wholesaler.

Well known before the war as the most efficient small ventilator built, Blo-Fan soon will be ridding thousands of additional homes of unwanted air. Cooking vapors and odors—bathroom fog—gameroom smoke and liquor fumes—laundry steam, all are eliminated as they rise by

**Blo-Fan**

**CEILING VENTILATORS**

Installed *directly over the source* of foul air—Blo-Fan gives nature a boost by catching vapors before they spread or soil interior decorating and furnishings.

You'll find a ready acceptance for Blo-Fan Ceiling Ventilators in modernization jobs as well as new construction—in moderate priced homes and expensive ones alike. Write us for the name of your nearest Blo-Fan distributor.



**SEND FOR NEW BOOKLET**

Full of factual information about ventilation. Gives types and sizes. Write today for your copy.

**PRYNE & CO., INC.**

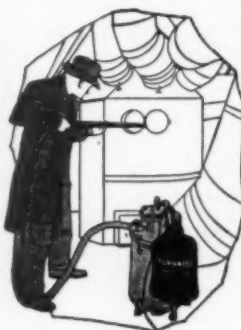
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INDEPENDENT WHOLESALE ACROSS THE COUNTRY

trations of these vapors, and particularly those containing benzol, should be kept below 100 parts per million. Spray booth vapors are dangerous to the health of the worker and care should be taken to minimize exposure to them.

The exhaust duct for a spray booth should be located in a horizontal position slightly below the object sprayed. Stagnant regions within the booth should be carefully avoided or should be provided with exhaust. The air volume should be sufficient to maintain a velocity of 150 to 200 fpm over the open area of the booth, and the vapors may be discharged through a suitable stack to permit dilution, but it is better practice to pass the fumes or vapors through baffle-type washers or scrubbers designed for efficient spray fume removal.



Plan now for post-war profits. Get details!

**TORNADO  
Furnace Cleaners**

**A PROFITABLE  
POST-WAR BUSINESS**

SET yourself up in business for post-war independence. Equip with a TORNADO Furnace Cleaner. As a leverage for selling service and supplies, it's a winner! Powerful! Portable. Easy to operate.

**BREUER ELECTRIC MFG. CO.**  
5082 Ravenswood Ave., Chicago 40

**Furblo**



Furblo sectional construction means quick, labor-saving installation.

Furblo long hour duty motors are the quiet, air conditioning type; no radio interference; rubber mounted; meet all power company requirements and all of your demands for a furnace blower of unsurpassed economy, simple installation and trouble-free service. Write for complete details today.

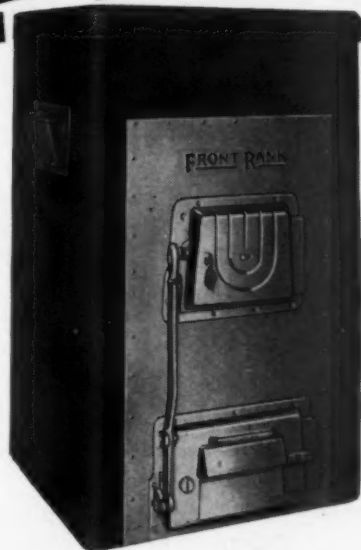
Furblo Blowers improved over a period of years by capable engineers is your assurance of finest performance from finest equipment.

**FURBLO CO., HERMANVILLE, MICH.**

# FRONT RANK



**Puts on A  
GOOD FRONT**



**FRONT RANK**  
Furnaces Have the  
Features!

Look for more in  
future ads



The connection between the drum of a steel furnace and the front of same is usually made with cement or asbestos gaskets. This is at best only a temporary joint, and must be repacked after a few years to make the connection dust and smoke tight.

On FRONT RANK Furnaces we use a 10-gauge all-steel front, permanently welded directly to the feed and ashpit pouches. This front is in two pieces to allow for expansion, and is so constructed that it is always gas and dust tight.

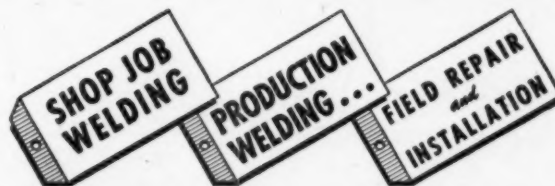
The smooth steel plates, of course, present a more pleasing appearance than even the most carefully molded castings, hence the eye appeal of our product is considerably enhanced. The bright red and silver colored name plate which gives the furnace number and BTU rating is also distinctly ornamental.

The front is so designed that by bolting on a top plate the square front may be used with a cylindrical casing.

**Dealers**—FRONT RANK has the features that mean Sales and Profits for YOU. Order from your Jobber.

Member National Warm Air Heating and  
Air Conditioning Assn.

**FRONT RANK FURNACE CO.**  
DIVISION OF LIBERTY FOUNDRY CO.  
2500 OHIO AVE., ST. LOUIS 4, MO.



**HANDLE ALL 3 JOBS  
with this ONE**

## G-R WELDER!



• TOPS on the list of time-saving, cost-cutting equipment for modern sheet metal shops is a versatile G-R welder. The Model 10, shown above, has an output range of 10 to 100 amperes and handles  $\frac{1}{8}$ " rod with excellent penetration — just right for most sheet and frame welding. Yet this fully power-factor corrected unit draws less than 30 amperes on a 110-volt line, or less than 15 amps at 220 V. Sturdily built, it will handle steady production welding as well as job work. Its compactness and low power requirements make it ideal for field repair and installation work.

Phone your nearby G-R distributor, or write us today for free literature on the Model 10 and larger G-R welders — standard G-R models are available to 2,500 amp. capacity.

**GLENN-ROBERTS COMPANY**  
3100 E. TENTH STREET • OAKLAND 1, CALIFORNIA  
2107 ADAMS STREET • INDIANAPOLIS 1, INDIANA

## SCHWAB SAFE STOKERS

Available  
NOW!



The Schwab Transmission Is a Positive Ratchet Drive

Reconversion should be no problem for you on stoker installations. Line up with Schwab Safe and make available to yourself all sizes of commercial and industrial stokers! Capacities from 62 to 600 pounds per hour.

We're right behind you on every installation, too. The Schwab power unit is made here . . . by us . . . and we can always take care of any repairs or adjustments that might arise.

Do yourself a favor . . . write today for further information.

**THE Schwab Safe Company**  
**LAFAYETTE, INDIANA**

81 years of continuous Manufacturing Experience

### Hoods for Chemical Laboratories

Hoods used in chemical laboratories are generally provided with sliding windows which permit positive control of the fumes and vapors evolved by the apparatus. Their design should offer easy access for the installation of chemical equipment and should be well lighted. Air velocities should exceed 75 fpm when the window is opened to its maximum height.

### Protection Against Corrosion

The removal of gases and fumes in many chemical plants requires that metals used in the construction of the exhaust system be resistant to chemical corrosion. A list of the materials which may be used to resist the action of certain fumes is given in Table 3. Hoods and ducts when short may frequently be con-

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**Roll Forming Machines**  
**and Roller Dies**

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## Wagner Motor Service from Coast-to-Coast...



### KEY

- ★ Wagner Service Branches.
- ▲ Wagner Authorized Electrical Service Stations.
- Wagner Authorized Electrical Parts Distributors.



Wagner electric motors seldom need servicing because they are designed and built to give years of dependable, troublefree service. But when service is needed, users of Wagner motors find our coast-to-coast motor service quick, convenient, and efficient. This service means savings of time, effort, and expense.

The map, pictured above, shows Wagner's nationwide facilities. The stars indicate Wagner Service Branches where, in addition to regular service repairs and parts being available, factory-trained engineers are ready to

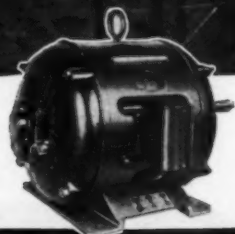
help you with your toughest motor problems. The triangles represent Wagner Authorized Electrical Service Stations where motor repairs can be taken care of. The dots indicate the location of Wagner Authorized Electrical Parts Distributors where genuine Wagner motor parts for replacement are available.

Pictured at right is one of Wagner's branch motor repair shops in operation — this one at the Detroit Service Branch.



### MOTORS

are but one of several WAGNER PRODUCTS serving industry. Other WAGNER PRODUCTS: AIR BRAKES • BRAKE LINING • HYDRAULIC BRAKES • INDUSTRIAL BRAKES • INDUSTRIAL BRAKE CONTROLS • NoRul • TRANSFORMERS • TACHOGRAPH (Recording Speedometer)



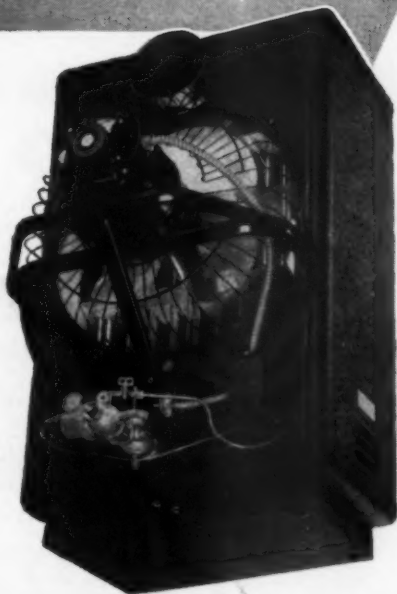
M45-22A

**Wagner Electric Corporation**  
ESTABLISHED 1891

6371 Plymouth Avenue, St. Louis 14, Mo., U. S. A.  
In Canada: Wagner Electric at Leaside, Ontario  
**ELECTRICAL AND AUTOMOTIVE PRODUCTS**

# REZNOR

## GAS FIRED UNIT HEATERS



The fan on a Reznor gas-fired unit heater directs a steady, controlled volume of clean heat to the area to be heated. It is never too hot or too cold with a Reznor.

Used either for primary or auxiliary heat, Reznor heaters are ideal in heating all sizes and shapes of industrial buildings, retail stores, small establishments, garages, airports, churches, bowling alleys, and many other types of locations.

Fuel cost is *total* heating cost... no fuel storage... no maintenance. Clean heat pours forth when you want it—where you want it.

Reznor, the oldest name in gas heating equipment, makes full range of sizes of gas-fired Unit Heaters. Details are found in the *new* Reznor catalog... just off the press!

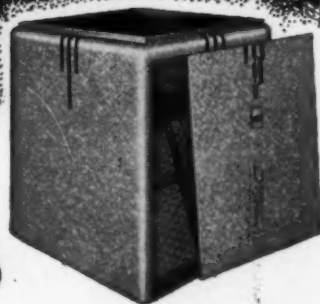
Your copy will be mailed promptly upon request.

**REZNOR MANUFACTURING CO.**  
JAMES STREET • MERCER, PENNA.

"GAS HEATERS EXCLUSIVELY SINCE 1888"

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## QUICK PROFITS



**\$50 or more profit  
for you on every installation**

### NOW...EVERY GRAVITY FURNACE OWNER A PROSPECTIVE CUSTOMER

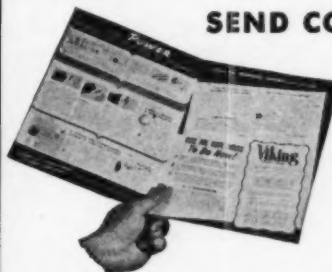
Plan to be an aggressive Blower Dealer and cash in on the tremendous market for Blowers. There's ready profit for you because Viking Blower-Filter installations mean profits of \$50 or more per installation, and they will come mighty often now that priorities are removed. That is why so many furnace men are becoming aggressive Viking Blower dealers ready to cash in on Winter Air Conditioning needs of their customers.

### BLOWER SELLING MADE EASY!

★ Learn what Winter Air Conditioning really is and how to sell it. Get your own copy of our informative house organ "The Conditioner".

★ Planning file, sales and educational literature are yours to help turn leads into cash customers.

### SEND COUPON *TODAY!*



Viking Air Conditioning Corporation  
Dept. AA-11  
5600 Walworth Avenue  
Cleveland 2, Ohio

Please send at once back issues of "The Conditioner" and Educational Literature.

Name

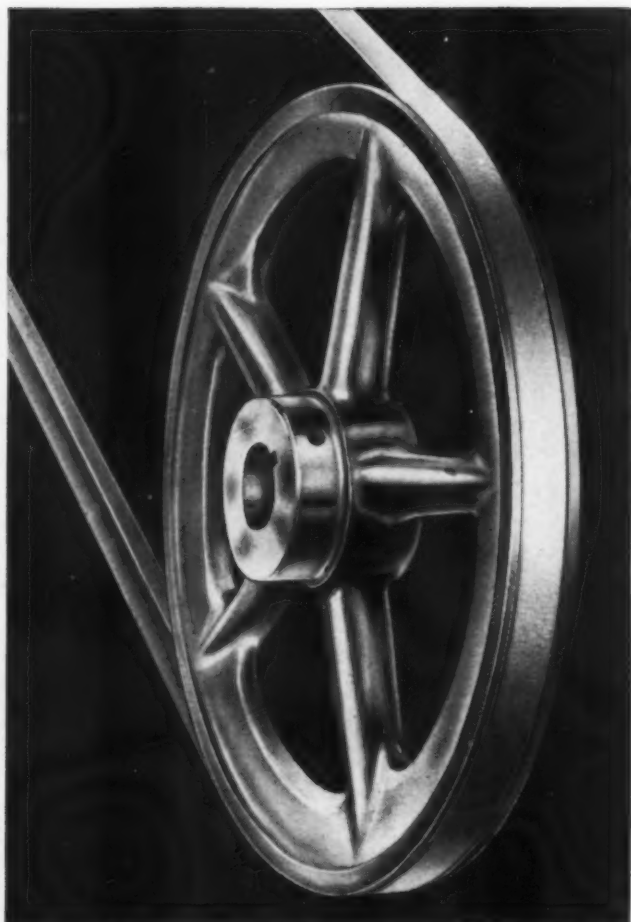
Address

City  State

# Viking



**AIR CONDITIONING CORP.** 5600 WALWORTH AVE.  
CLEVELAND 2, OHIO



## MAUREY V-PULLEYS

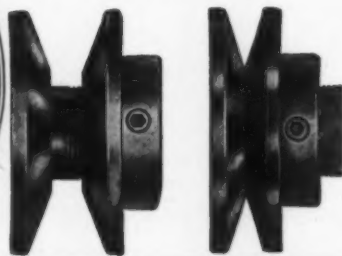
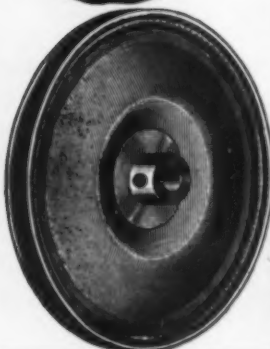
**provide a L-O-N-G step toward  
TROUBLE FREE Performance**

Our long experience in designing and manufacturing V-Pulleys, our complete understanding of their uses, and the finest materials—all are combined in making Maurey V-Pulleys the very best Pulley installations for Refrigeration and Air Conditioning systems as well as for Fans and Blowers.

For unfailing, continuous operation be sure to specify Maurey V-Pulleys.

**MAUREY  
MANUFACTURING CORP.**

2915 South Wabash Avenue  
CHICAGO 16, ILLINOIS



structed of wood and be quite effective. Rubberized paints are available and may be applied as protective coatings in handling such gases and fumes as chlorine and hydrochloric acid.

Table 3.—Materials to Be Used for the Protection of Exhaust Systems Against Corrosion\*

Type of Fume Conveyed	Protective Material to Be Used
Chlorine	Rubber lining or chrome-nickel alloys
Hydrogen sulphide	Aluminum-coated iron, aluminum, high chrome-nickel alloys
Ammonia	Iron or steel
Sulphurous gases	High chrome-nickel alloys
Hydrochloric acid	Rubber lining, chrome-nickel alloys
Nitrous gases	Nickel-chrome alloys

\*Condensed from data given by Chilton and Huey, Industrial and Engineering Chemistry, Vol. 24, 1932.

# NIAGARA

GRAVITY AND FORCED AIR

## FURNACES

DURABLE • EFFICIENT • DEPENDABLE • ATTRACTIVE

THE FOREST CITY FOUNDRIES CO.

2300 WEST 27TH ST. • CLEVELAND 13, OHIO



**HAPPY DAYS ARE  
HERE AGAIN**

for **GEHL**

**Stoker Dealers!**

• Again Stoker  
Sales Are "Blow-  
ing a Gehl."

● Gehl pre-war leadership will continue throughout the years ahead. An enviable reputation and specialized stoker experience by a 78-year-old Company mean quick customer approval . . . lasting satisfaction. Get off to a quick start with the time-proven stoker that's engineered to do a better job for more years . . . all-cast, rust-resisting chassis; Barometric, automatic control of chimney draft and a score of other features that make sales.



Domestic and Industrial Models now available again.

WRITE today for literature and dealer plan

**GEHL BROS. MFG. CO.**

Established 1867

Dept. BL-802

West Bend, Wisconsin

**A GEHL WINS FRIENDS WHEREVER IT GOES**



**50** FOOT SEAMLESS ROLLS

**ECONOMICAL—  
EASY TO USE**

STOCKED BY LEADING DISTRIBUTORS

## **FOLLANSBEE SEAMLESS TERNE ROLL ROOFING**

No cross-seaming means substantial savings in time and solder—speeds up the job and steps up profits. Easy to cut to lengths required—ideal for gutters and valleys.



### **FOLLANSBEE STEEL CORPORATION**

GENERAL OFFICES • PITTSBURGH 30, PA.

Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee.

Sales Agents—Chicago, Indianapolis, St. Louis, Kansas City, Nashville, Houston.

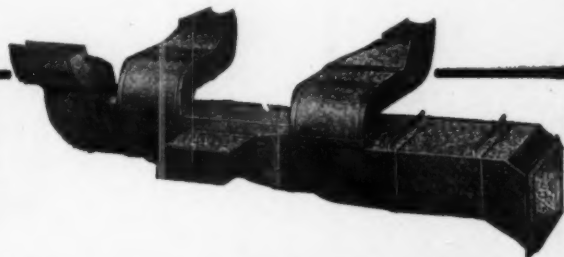
Los Angeles, San Francisco, Seattle; Toronto and Montreal, Canada.

Plants—Follansbee, W. Va., and Toronto, Ohio

COLD ROLLED STRIP • ELECTRICAL SHEETS & STRIP • CLAD METALS  
POLISHED BLUE SHEETS • SEAMLESS TERNE ROLL ROOFING

## **CHAR-GALE**

● Because they're already engineered to save you time and trouble, you can make extra profits with Char-Gale "Pre-fabricated" Ducts and Fittings. Made by standard mass production methods . . . all sizes are accurate . . . no delays on the job. Try us on your next installation.



## **Pre-Fabricated DUCTS and FITTINGS**

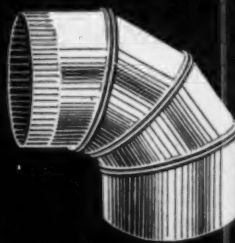


### **SMOKE PIPE**

◀ Backed by years of experience, the Char-Gale double offset lock gives continuous satisfaction.

### **ELBOWS**

Easy to adjust . . . extra ▶ large segments . . . won't come apart. Char-Gale elbows are trustworthy.



### **PRE-FABRICATED AIR DUCTS**

▲ The "quick-method" chart in the Char-Gale catalog gives accurate sizes for any job, and figures costs for you. Send for it.

**CHAR-GALE  
MANUFACTURING CO.**

### **CATALOG NO. 40**

For complete information on smoke and stove pipe, elbows, warm and cold air pipe, registers and air filters write CHAR-GALE Mfg. Co., 3125 Hiawatha Ave., Minneapolis 6, Minn.





## PENN-AIRE FURNACES

GRAVITY, CAST IRON

**Popular Price  
Practical Design  
Economical Operation**



*Dealers: Join the National Association's Campaign to promote true indoor comfort through conditioned warm air.*

**UNION MANUFACTURING CO., INC.**  
BOYERTOWN, PA.

## Kruckman—Labor- Management Conference

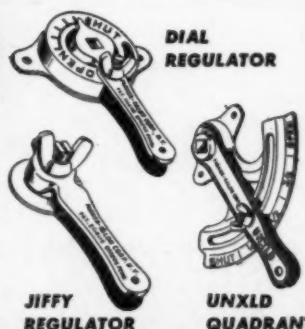
(Continued from page 117)

ference. He seemed to have fairly gauged what confronted him.

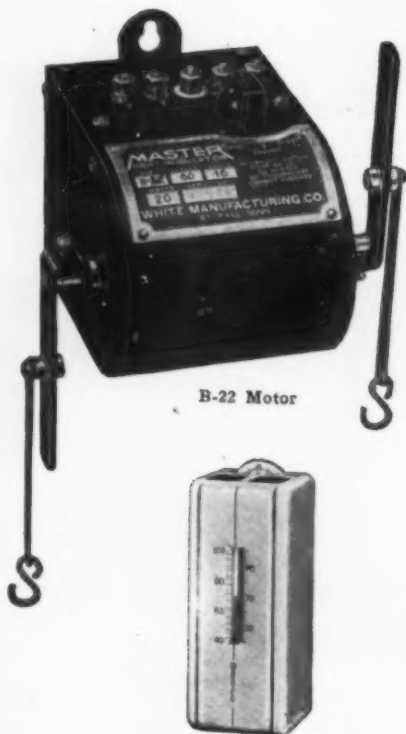
Low Schwellenbach—over 6 feet tall, and faintly redolent of the book-lined study—is unique in a conspicuous job in Washington. He certainly is unique in the experience of the baffled labor leaders. They knew how to handle the cool, mentally well-groomed, professional femininity of Miss Perkins. They understood most of the precise, methodical, statisticians

## A Type And Size For Every Need

For efficiently controlling light and medium dampers in heating, ventilating and air conditioning systems, specify Parker-Kalon Damper Controls. The line includes all types and sizes, at a range of prices to fit the needs of any job. Parker-Kalon Corp., 190-192 Varick Street, New York.



**PARKER-KALON damper controls**



B-22 Motor

A-23 Plain Thermostat

## MASTER TEMPERATURE CONTROLS

### LIMITED PRODUCTION RESUMED

Yes, we have resumed production of some of our standard products—notably our old reliable B-22 damper motor and A-23 plain thermostat—but in very limited quantities.

The sudden end of the war brought us face-to-face overnight with all the problems of reconversion—finding the right materials in practical quantities—training help, etc.

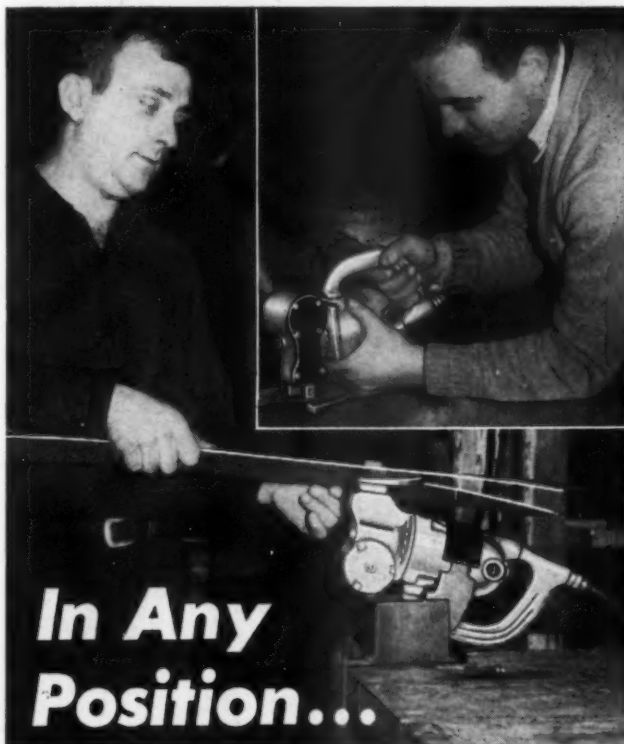
The production of new items is completely out of the question for the immediate present.

Such production as we have will be allotted as fairly as possible among our established customers only.

TO CUSTOMERS we say: "Rest assured that no time will be wasted in bringing our output up to maximum."

TO NEW FRIENDS interested in joining us we say: "Your patience will be rewarded when it is possible to admit you to the long line of satisfied customers who for years have relied upon the efficiency of Master Temperature Controls to give their trade sound value and service."

**WHITE MANUFACTURING COMPANY**  
2368 University Ave. St. Paul, Minnesota



**In Any  
Position...**

## Your **UNISHEAR** is Profit-Side Up!

Grasp this light, well-balanced Unishear and use it like a hand shear — cut through metal at a speed of 15-20 feet per minute as fed — follow straight lines, curves, angles, notches and inside shapes with hairline accuracy. Clamp it, cutter side up, in a Stanley Cradle and you have a sturdy, speedy bench shear. This makes the portable Stanley Unishear a profit tool anywhere in the shop!

Stanley Unishear No. 214, shown in use, has a capacity up to 14 gauge hot rolled steel, and softer metals in heavier gauges. Other portable models in sizes to cut 18, 16, 12 or 8 gauge hot rolled steel. Stationary models handle metal up to 10 gauge. Write for illustrated folder. Stanley Electric Tools, New Britain, Connecticut.

**STANLEY**

**STANLEY UNISHEARS**  
THE ELECTRICALLY DRIVEN HAND SHEARS

THE GREATEST  
ADVANCE IN  
THE HISTORY  
OF AUTOMATIC  
HEATING—



ONLY THE  
*Stok-A-Fire*  
*De Luxe Model*  
HAS THE  
**COAL-METER**  
WHICH AUTOMATICALLY  
REGULATES  
FUEL AND  
AIR FEED

AUTOMATIC  
AIR REGULATOR



REJECTOR SYSTEM



INSTALLATION  
PACKAGE

This is IT! The New, Improved STOK-A-FIRE De Luxe model! An entirely new and better method of stoker operation giving the advantages of automatic heat in a degree never obtainable before. A high quality stoker at a LOW PRICE made possible by our facilities, 14 years' stoker manufacturing and servicing experience, and our mass production methods.

The New, Improved STOK-A-FIRE De Luxe model—the latest and greatest advancement of an organization noted for pioneering stoker improvements — offers a bigger-than-ever opportunity for bigger sales and profits. Write us at once for desirable franchise still available.

**Stok-A-Fire Co.**  
6506 OLIVE BOULEVARD  
ST. LOUIS 5, MO.

## FOR 101 METAL CUTTING JOBS..



The No. 8 showing new Wells Wet Cutting System — an economical accessory available for all No. 8 Wells Saws.

## WELLS No. 8 *Time Saver*



With a Wells No. 8 in your shop you save time in these ways: First—there's little set-up time. Your Wells is always ready for any shape, size or type metal you clamp into its quick-acting vise. Then—because the Wells has gravity-feed and an automatic shut-off, one man can operate two or more Wells saws simultaneously. The new Wells-designed Wet Cutting System provides all the time-saving advantages of wet cutting. It's an economical accessory for production sawing. Then too—because a Wells is easily portable, you can save time and labor by moving the saw to the work. Find out for yourself. Write for details.

### *Specifications*

CAPACITY: Rectangular . . . . . 8" x 16"  
(Special Guides) . . . . . 5" x 24"  
ROUNDS: . . . . . 8" Diameter  
MOTOR: . . . . . ½ H. P., A. C. or D. C.  
SPEEDS: . . . . . Selective 60, 90, 130 feet per minute  
WEIGHT: . . . . . Approximately 750 pounds



Products by Wells are Practical

**METAL CUTTING  
BAND SAWS**

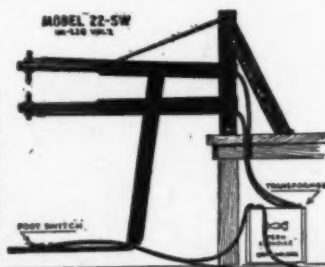
WELLS MANUFACTURING CORPORATION  
1819 WILSON AVE., THREE RIVERS, MICHIGAN

and scholars who clutter up the Department of Labor, and have reduced it to a crossword puzzle no one has completely unscrambled. But they do not get Schwellenbach, easy as an old shoe, lucid as a judge, and two or three steps ahead of them in finding an immediate path. Most of the labor leaders do not like any one in Government to find the path. They want to break trail themselves, and show the trail to Government. It will take them some time to get acquainted with Schwellenbach. Perhaps they really will know him well after this conference is jelled. They are bound to like him when they understand him. But it is almost certain the high priests of industry will never be utterly comfortable with him. They will take his supple candor as a cloak for some deep deception. And, naturally, his honest belief in the doctrine that, since we have developed production to its high point,

### FERN Klondike Spot Welder

#### Model 22SW Bench Type

Operates on any ordinary 30 or 60 amp. electric service. Spot welds 20 gauge or lighter metal, cold-rolled steel, hot-rolled steel (Clean, Pickled), Stainless Steel, Nickel Plated Steel, Nickel Alloys, Monel Metal, Silicon Bronze Type Alloys, Pure Zinc and Nickel Silver, Unpickled Hot-Rolled Steel, Aluminum and its Alloys, Tin Plate, Terne Plate, Chrome Plate, Galvanized Iron and other coated materials. The Fern Klondike Spot Welder costs but a third of other spot welding equipment but does the work of machines which cost three times as much. This equipment can be transferred from job to job or can be used on a bench in shop. Can be purchased in an 18 or 20 inch throat, very simple to operate.



**RALPH FERN**

2517 Boulevard Ave.  
Scranton 9, Penna.

## PLASTIC FAN BLADES AND BLOWER WHEELS



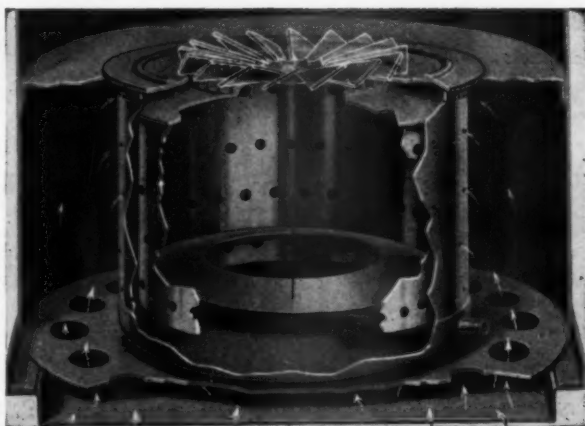
BETTER FAN satisfaction is assured when you equip your fans with Burden Plastic Blades. These quiet propeller type modern blades have a much lower noise level. They have longer life and weigh only 1/5th to 1/4th as much as metal blades. Yet they have the same structural strength.

Burden Blades have been tested from—60 to 300 F. They are resistant to corrosive action. Low moisture absorption.

**3 TYPES — MANY SIZES**  
**Overlapping — Cloverleaf — Single Blade**  
Also Complete Line of Aluminum Blades.  
Write for Descriptive Folder



**BURDEN FAN and BLOWER CO.**  
8619 West 3rd Street • Los Angeles 36, California



## Famous Patented *Monogram* Vaporizing Burner for Highest Known Efficiency With Oil

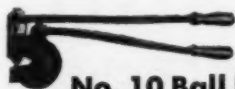
**MONOGRAM'S** exclusive engineering achievement which converts oil to gas and mixes the gas with air before combustion produces a flame that is hotter, cleaner, more efficient under all conditions . . . it is the highest known efficiency attainable with oil. Used exclusively in Monogram oil burning furnaces and water heaters. Watch for announcement of post-war models.

**The QUINCY STOVE MFG. COMPANY**  
QUINCY, ILL.

## WHITNEY-JENSEN PRODUCTS 30 YEARS EXPERIENCE

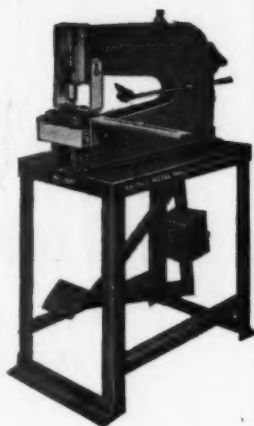
### TOGGLE ACTION FOOT PRESSES

A powerful linkage **MULTIPLIES** foot pressure to provide fast, **EASY** action. Made in 4 sizes—7", 10", 18", 24" throat depth. Capacity 2" hole in 16 ga. iron.



#### No. 10 Ball Bearing PUNCH

Screw press action, with ball bearings in the race, gives great punching power in a light-weight tool. Capacity  $\frac{3}{4}$ " hole in  $\frac{1}{4}$ " iron, weight only 8½ lbs.



#### No. 17 BENCH PUNCH

Easy to operate, with smooth roller bearing action. Very practical where work is of a varying nature. Capacity  $\frac{1}{4}$ " hole in  $\frac{1}{4}$ " iron. Depth and side gauges furnished, 6"x8" work table available.



**WHITNEY METAL TOOL COMPANY**  
91 FORBES ST. • ROCKFORD, ILL.

## ★ *Peerless* ★ **MERCHANDISING PLAN**

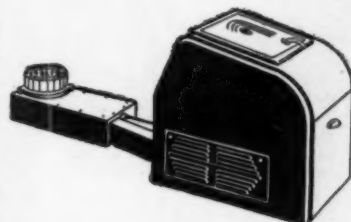
Distributor-Dealers, with an eye to successful promotion of Stoker Lines will be interested in the many aggressive features of this **NEW PEERLESS MERCHANDISING PLAN**, which is entirely too broad in scope to detail in this message.

You will be highly pleased with your Fire-Guard **PROFITS** resulting from the **NEW PEERLESS MERCHANDISING PLAN**, supported by sales aids aplenty, thorough technical information, fully protected and respected territories, plus fast selling attractively priced stoker.

While time-tested mechanical superiority is a prime requisite to the successful distribution of any device, quality must be combined with a **MERCHANDISING PLAN** attuned to post-war Distributor-Dealer requirements in order to prove profitable.

It has long been a proven fact . . . Peerless Fire-Guard Stokers have mechanical superiority — The King of them all.

For full and complete information write Clarence A. Rundall, Manager, regarding a Fire-Guard Stoker Distributorship. Very desirable territories are still open.



### PEERLESS FIRE-GUARD STOKERS



**Peerless**  
**MANUFACTURING CORPORATION**

INCORPORATED  
LOUISVILLE, KENTUCKY  
SINCE 1884

## Write NOW for a TRIAL ORDER

Discover the Elaterite roofing secret for yourself. Write NOW for trial order and see for yourself why this superior roofing . . . the adaptation of an ancient plastic secret . . . will assist you to better profits and better work.

### ELATERITE PLASTIC PRODUCTS

6930 South Shore Drive

Chicago, Illinois

**SELLS  
ITSELF**



## Majestic <sup>Heavy Duty Steel</sup> Stoker Furnace

For Gravity or Forced Air Systems

### ENDS THE CLINKER PROBLEM!

- Specially designed and built for stoker firing • Suited for any make or type of domestic stoker • Built-in compartment for convenient dust- and gas-free clinker removal • Interchangeable panels permit placing stoker on either side • Rugged, durable, boiler plate steel construction • Leakproof electric-welded joints inside and out • A high quality, efficient heating plant at an attractive price. • Backed by Majestic's 38 years of heating experience!

The **Majestic Co.**, 990 Erie St., Huntington, Indiana

SAMPSEL BUILDS  
BETTER CONTROLS

**Sampsel**  
WARM AIR LIMITS  
and FAN CONTROLS

Type S-48 Warm Air Limit Control. Two or three wire line or low voltage for Limit Control Operation.

Type S-49 Fan or Blower Control. Two wire line voltage for Fan or Blower Control Operation, only.



### GET YOUR SHARE of this BIG, PROFITABLE MARKET

8 out of 10 homes are heated by hand-fired furnaces or boilers. Sampsel Controls open this and other vast markets for you!

The S-48 provides protection against overheating. Most states require this safety feature.

The S-49 Fan Control assures the utmost efficiency from a furnace equipped with fan or blower.

These Controls are adaptable to all heating systems. See your jobber—or write us.



SPRING VALLEY, ILLINOIS

## There's Good Profit for You

in Selling

## MONMOUTH HUMIDIFIERS

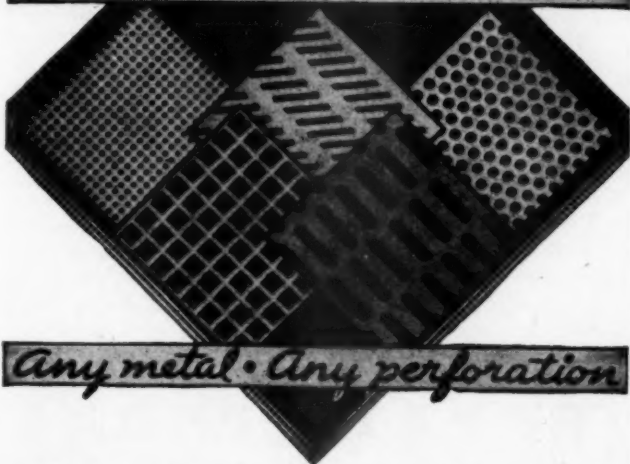
- For all warm air systems. Descriptive Bulletins and prices on request.

Formerly made by Monmouth Products Co.  
Now produced by

## THE CLEVELAND HUMIDIFIER CO.

7802 Wade Park Ave., Cleveland 3, Ohio

## PERFORATED METALS



*Any metal • Any perforation*

H. & K. Perforated Metals are accurately made and embrace a great variety of perforations for use in screening, grading, ventilating and straining of different substances.

Tell us your requirements and we will send booklet showing actual sizes of perforation.

**The Harrington & King PERFORATING CO.**

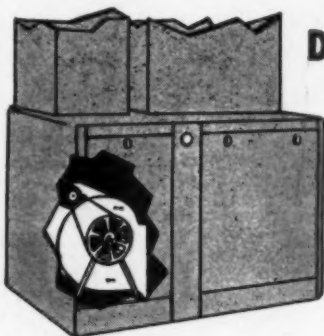
5649 Fillmore Street, Chicago - 114 Liberty Street, New York

## CHOOSE *Brundage* BLOWER FILTER ASSEMBLIES

for

**DEPENDABILITY**

**IN YOUR  
WARM AIR  
FURNACE**



Brundage Blowers are engineered, styled, and built to meet the demands of every type of warm air heating plant — coal, gas or oil. Quietly and efficiently they help you give the consumer greater comfort and greater value on his investment.



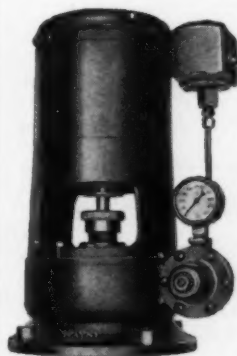
*Blower Specialists*  
Since 1919  
KALAMAZOO 11,  
MICHIGAN

**WAYNE**  
HOME EQUIPMENT

DISTRIBUTOR - DEALER

## PARTNERSHIP PLAN

- COMPLETE LINE OF HOME EQUIPMENT
- BROAD ADVERTISING PROGRAM
- SELLING HELPS THAT SELL!

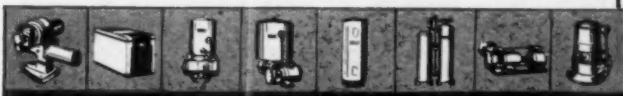


★  
**VERTICAL PUMPS  
For  
DEEP WELLS**

Available as illustrated—with or without controls—or as a complete automatic water system.

**You Make GREATER PROFITS  
In the Popular Price Range!**

WAYNE OIL BURNER CO., Fort Wayne 4, Indiana



## ALUMAWELD SOLDER and FLUX

*A Soft Solder*

(Not a Welding Rod)

- SOLDERS ALUMINUM
- SOLDERS ANY DISSIMILAR METAL TO ALUMINUM
- SOLDERS ALL DIFFICULT TO SOLDER METALS
- SOLDERS AT 550° F.

ALUMAWELD high tensile strength solder and liquid flux provides a bond that's strong as a weld for anything other than structural strain. Low melting point makes it more practical than welding for many jobs. Used by leading industries since 1930.

SEND FOR SOLDERED SAMPLE NOW!

**LLOYD S. JOHNSON CO.**

2241 Indiana Ave., Chicago 16, Ill.



## ATH-A-NOR FURNACES AND PARTS

For more than 50 years the name Ath-A-Nor has meant top quality and best performance in furnaces. Economy and efficiency are the best-known qualities of the Ath-A-Nor furnace and of Ath-A-Nor furnace repair parts. Buy and install Ath-A-Nor for best results and greatest fuel economy!

**MAY-FIEBEGER COMPANY**  
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR  
OVER 50 YEARS  
NEWARK, OHIO

**"Use CLARAGE  
PRODUCTS and  
Repeat Business  
Comes Easy!"**

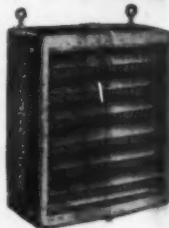
This nationally known, nationally accepted fan equipment helps you land desirable jobs—helps you **KEEP** desirable customers. It will pay to figure with us on any air handling or conditioning project. Write for catalog covering complete Clarage line of fans, blowers, unit heaters, coolers and conditioning units.



EXHAUST FANS



FURNACE FANS



UNIT HEATERS



COMPLETE  
AIR CONDITIONING  
•  
COOLING  
•  
VENTILATION  
•  
FACTORY HEATING  
•  
MECHANICAL DRAFT  
•  
FANS and BLOWERS  
for  
INDUSTRIAL PURPOSES

**Clarage Fan Company** Kalamazoo, Mich.  
APPLICATION ENGINEERING OFFICES IN ALL PRINCIPAL CITIES

that the functional organism of committees, plus careful organization, will keep the conference working for enough weeks really to make the formula which will provide the successor to the National War Labor Board. It is his general idea that the conference may be most successful by disposing of one chief unit of purpose in one period of time; it should then go home for some weeks and digest what it has done. Thereafter it should be ready to come back and take up progressively another job. He calls this a "continuing existence."

There is another Why that puzzles us, here, in Washington. There is scarcely a letter or a report of any kind that goes out of Washington these days which fails to belabor Schwellenbach and the confer-

## REPAIR PARTS

for  
STOVES—FURNACES—BOILERS

Also

**MODERNAIRE** FURNACES

Fittings, Registers, Supplies

**DES MOINES  
STOVE REPAIR CO.**

Sam C. Green  
Fred R. Green

DES MOINES, IOWA  
Since 1869

**IT SAWS!  
IT FILES!**



A PORTABLE  
POWER-SAW  
AND FILE

**New  
MULTI-PURPOSE TOOL  
SAVES TIME — SAVES MONEY**

★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable... carry it from job to job.

### QUICK DELIVERIES

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only \$45.00. May also be obtained complete with heavy duty drill at \$90.00, or with high-powered, light-weight drill at \$83.00.

Phone your jobber for demonstration today or write us direct!

### LIBERALLY GUARANTEED

SAW-CHIEFS are guaranteed to give complete satisfaction. Your money refunded if the SAW-CHIEF does not save hours of labor on countless operations.

ORDER **SAW CHIEF** TODAY

**CHICAGO** PRECISION  
EQUIPMENT CO.

920 SO. MICHIGAN AVE., CHICAGO 5, ILLINOIS

# PLANNED SERVICE



The Grand Rapids Furnace Cleaner increases your profits by enabling you to merchandise through your service department. While you make money on the cleaning you make an additional amount by selling new equipment and repair jobs. This planned service pays in a third way, too, for it saves vital fuel by keeping your customers' furnaces operating efficiently.



The sturdy Grand Rapids Furnace Cleaner is soundly engineered to give years of satisfying service. It cleans thoroughly, sucking out all dirt and dust, eliminating "plug up" conditions. Quickly cleans furnaces, boilers, chimneys, stokers, oil burners, heaters — or the entire basement. Write for complete details.

## GRAND RAPIDS FURNACE CLEANER MODEL OF The Doyle VAC-IT

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.



BARTH U. S. A.

## FOOT SQUARING SHEAR

A real Shear in every way for cutting 18 gauge material. Full 36 inch cut. Complete with front, back, side, and bevel gauges.

Ask Your Dealer

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ence, and belittle the President. The dissonant blast does not make sense. It is out of proportion in relation to the actual scoreboard of errors of the administration. Minor slips have been magnified into major catastrophes. Apparently no effort is made to interpret the real objective of the President.

The solons on the Hill are just as sheeplike as are others in Washington, and largely join in the jeremiad. It is puzzling why there is not more effort to explain what the President is trying to do. He came into the White House with the din of discord over the tight stringencies of a highly controlled Government under war conditions. Business shrieked to be free of controls. People wanted to get from under the restrictions of numerous regulations which conflicted with their personal liberties. Industry moaned for the "free



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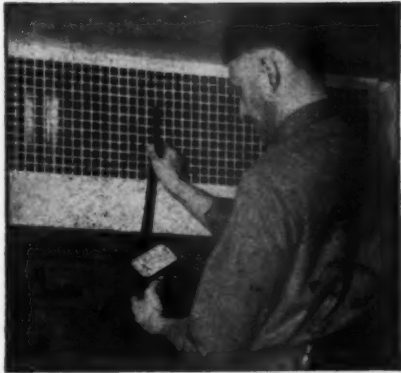
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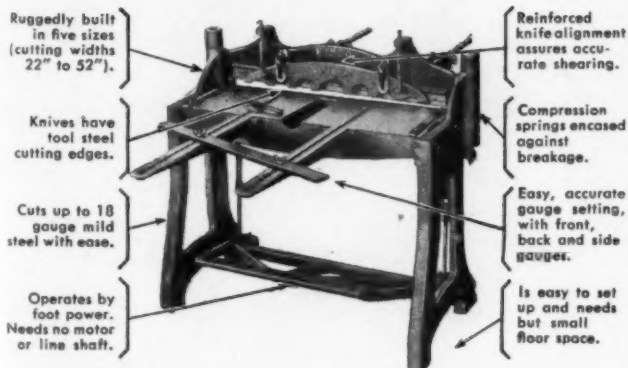
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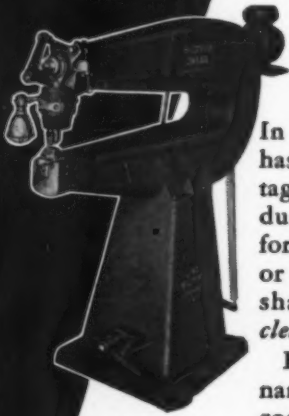
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competitive economy." With the several swift episodes that ended the fighting war, the President proceeded to get rid of the controls as fast as consistent. He delegated authority to the heads of departments and agencies, and he divested himself of the immediate responsibilities by every means at his command. He sought to impress the fact upon the people in various ways. It was his object to go back, relatively, to something like the Government we had 12 or 14 years ago.

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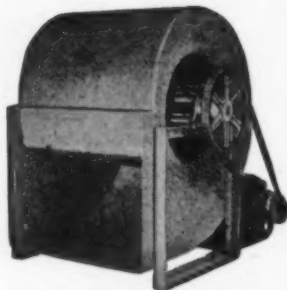
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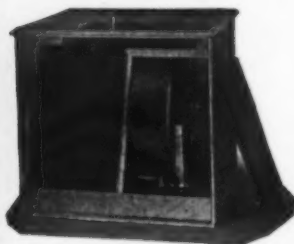
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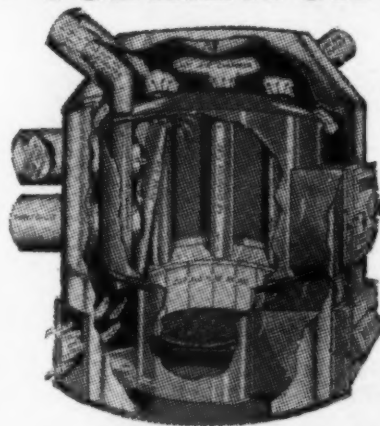


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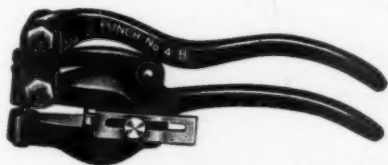
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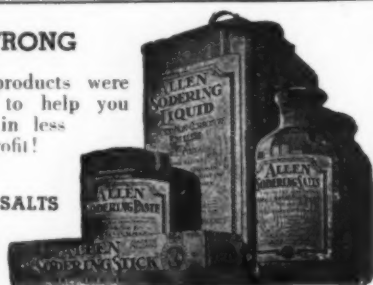


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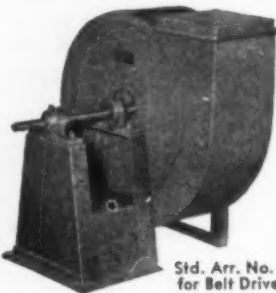
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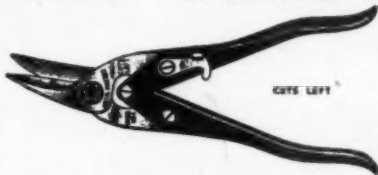
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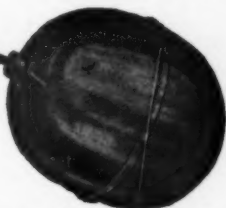
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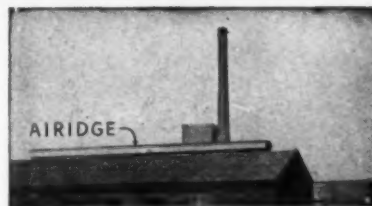
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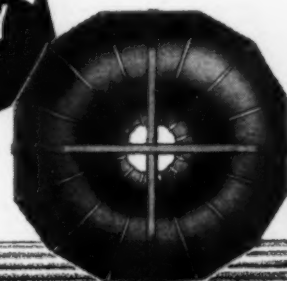
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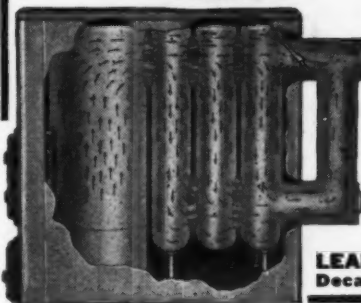
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Of American Artisan, published monthly at Chicago, Ill., for Oct. 1, 1945.

State of Illinois, County of Cook—ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared F. P. Keeney, who, having been duly sworn according to law, deposes and says that he is the publisher of the American Artisan and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher—F. P. Keeney, Chicago, Illinois.

Editor—J. D. Wilder, Chicago, Illinois.

Managing Editor—J. D. Wilder, Chicago, Illinois.

Business Manager—Chas. E. Price, Chicago, Illinois.

2. That the owner is (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given):

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5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above: (This information is required from daily publications only.)

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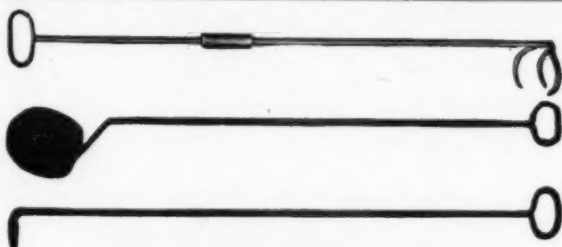
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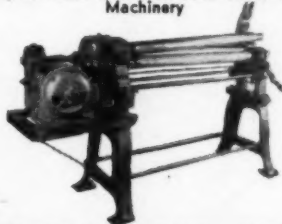
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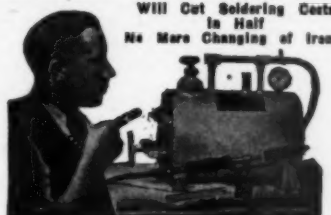
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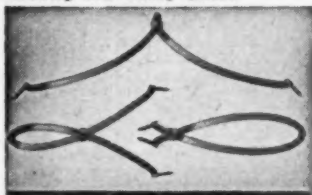
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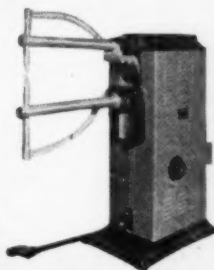
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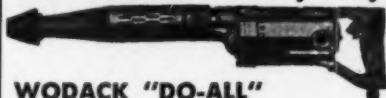
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the *right* steel  
in the *right* place  
at the *right* time



In the period of adjustment that lies ahead, your selection of a warehouse source for steel can play a role vital to you and your company . . . for the stakes in reconversion are high.

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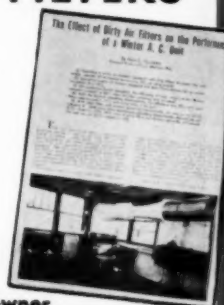
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